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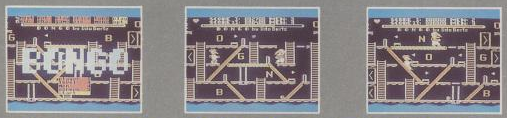

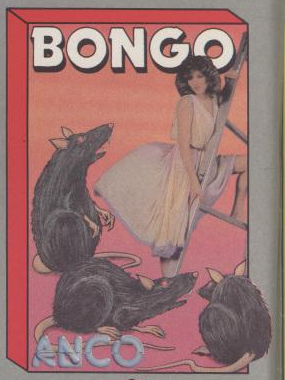

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Editorial

RECENT developments in the state of Commodore's financial health would suggest that all is not well with the world's biggest microcomputer company. While Commodore struggles with overdue debts and unsold stock, Amstrad announces a £26m profit and plans for a whole new range of products. So it goes...

However, all is not lost. We now have a UK price for the Amiga — £1500 including VAT, very much the figure we all expected. What we don't know is whether this price includes a monitor along with the main unit, keyboard, extra disk drive, 512K memory and a starter software. The cost of buying a hi-res colour monitor could be considerable.

Meanwhile, on the software side of the market funny things continue to happen. While the C16 and Plus/4 appear to have been written off by Commodore, huge discount sales at Christmas have led to a great demand for software. Chartsters Gallup now estimate that sales for C16 software have reached 50% of those for the 64, and new Plus/4 games and utilities are now beginning to appear with some regularity.

In the face of all this uncertainty, it would be a brave or foolish man who would try to predict the state of the market this time next year. Commodore seem unshaken in their confidence in the Amiga — but perhaps the eight-bit market has some surprises left in store.

Next Month

Serious Software
W/P, spreadsheets, databases

C128D
The all-in-one Commodore

Plus
News, views and reviews

EDITOR Christopher Jenkins **PRODUCTION EDITOR** Barbora Hajek **EDITORIAL SECRETARY** Geraldine Smyth **ADVERTISEMENT MANAGER** Simon Langston **MANAGING EDITOR** Brendon Gore **PUBLISHING DIRECTOR** Duncan Scot **TELEPHONE (ALL DEPTS)** 01-437 4343 **TELEX** 296275 SUNRGY **UK ADDRESS** Commodore Horizons, 12/13 Little Newport Street, London WC2H 7PP **US ADDRESS** Commodore Horizons, c/o Business Press Int'l, 205 East 42nd Street, New York, NY 10017 **SUBSCRIPTIONS** UK £10.00 for 12 issues, overseas surface (excluding US and Canada) £16.00 for 12 issues, US and Canada airlifted US$33.95 for 12 issues.

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ABC

SUBMITTING ARTICLES *Commodore Horizons* invites readers' contributions, either program listings or articles. Articles should be typed, double spaced with a wide margin. When possible programs should be submitted on cassette or disk with a printout on plain white paper. Please keep a copy of your submission — do not send your only copy. Please enclose an s.a.e. if you wish your submission to be returned. All submissions must be your own original work.

CP/M is solved

IN YOUR Feb 86 issue you published a letter from Terence Motley asking for CP/M software. If Terence has a 1570 disk drive he can get software from the CP/M users group (UK) on Osbourne SSDD format. He will need preformatted disks, but any good professional computer supplier will be able to format some disks for him; the company I use is in Laindon, Essex, and called **Healys Computer Center.**

For the 1541 disk drive user, CP/M disks are available from **ICPUG.** At present there are only a couple of disks available, but these will soon be added to. To join ICPUG contact Mr Jack Cohen, 30 Brancaster Road, Newbury Park, Ilford, Essex, 1G2 7EP.

Tony Harrison-Smith
Benfleet
Essex

Loading problems

I WAS astonished to hear Jeff Minter say "there isn't one C64 game my C128 won't run". I have a whole list of games which won't run on my trusty C128. I hope you can give some advice on how to run this software. The list includes **Frankie Goes to Hollywood** from Ocean, **Hyper Sports** from Imagine, Commodore's **International Basketball,** all Anirog flashing turbos, **Nodes of Yesod** from Odin, and **Frak** from Statesoft. I hope my machine is OK otherwise I will go Commodore crazy!

A Hannaford
Malta

WE ARE aware of problems with some Ocean/Imagine games, due to an illegal system call in the fast loader. International Basketball also seems to have problems, but we've not heard of any problems with the other titles. It doesn't seem likely that there's anything that can be done about the problem — but does anyone have any suggestions, or any other games which will not load on the C128?

Plus/4 publicity

I PURCHASED my +4 when they were first released, and recently purchased a second hand C16 primarily for a cassette recorder.

I would like to make contact with other +4/C16 owners to form a users club and thus exchange information with them. Please would you publish my address in your magazine for this purpose. I would appreciate any replies to include an s.a.e.

Perhaps your magazine has room for occasional articles on these machines. If so I would be pleased to co-ordinate the two.

M Pearce
39 Beminster Road
Winton
Bournemouth
Dorset BH9 1LG

GOOD to hear of a little support for the Plus/4; keep it up!

More on INPUTs

IN THE January 1986 edition you give a method of removing the question mark at the end of INPUT statements. Here are a couple of alternatives for the CBM 64 which may be of use to readers. For the machine code buff:

```
10 A$="":PRINT"ENTER WORD:";
20 SYS65487:A=PEEK(780):IF A<>13 THEN A$=A$+CHR$(A):GOTO 20
30 PRINT:PRINT A$
```

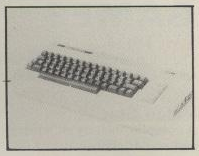
This calls CHRIN directly. CHRIN is similar to GET, retrieving characters one at a time. The ASCII value is stored in the accumulator register. This is the slowest method as it produces the string character by character, finishing only when it detects CHR$(13).

The Short Sharp Method:

```
10 POKE 19,64
20 INPUT"ENTER DATA";A$
30 POKE 19,0:PRINT
```

Using this method a value for A$ must always be entered, if necessary using a zero for a blank. The PRINT in line 30 is essential as the cursor will not go to the next line automatically. As many INPUT statements as you like may be inserted between the two POKEs.

H T Dale
Caithness



Any old Vics

I WAS interested to see that all the games for the VIC 20 chart are produced by Mastertronic. Is anyone else still in the market?

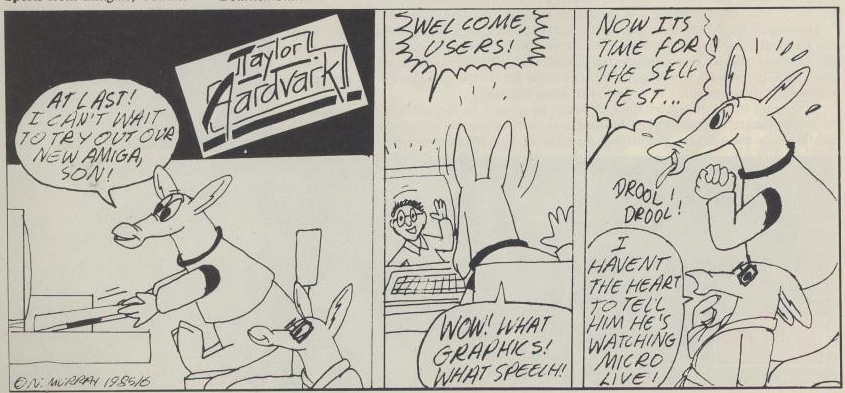
Where has all the software gone? When I first bought my VIC 20, I was inundated with software catalogues offering many tapes that I would have liked but could not afford. My plan was to buy a printer, then the software.

I bought the VIC and then the MPS801 in both cases just before the prices went down. It's taken a long time to be able to afford the software; now I'm here, where's it all gone?

Can anyone please advise where I can get a half decent word processor or database program or any other non-games programs?

J E Davies
Erith
Kent

ANY suggestions? It certainly does seem as if only Mastertronic's games are keeping the VIC-20 alive. We'd cover it more if there were more new products!


Taylor Aardvark
AT LAST! I CAN'T WAIT TO TRY OUT OUR NEW AMIGA, SON!
©N. MURRAY 1986/6
WELCOME, USERS!
WOW! WHAT GRAPHICS! WHAT SPEECH!
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I HAVENT THE HEART TO TELL HIM HE'S WATCHING MICRO LIVE!

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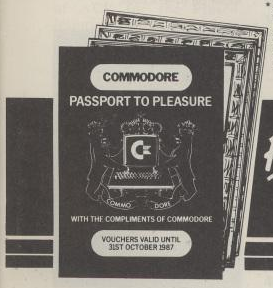

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CBM hits High Street

COMMODORE'S largest independent dealer, **Gultronic**, has opened a £25,000 sales centre dedicated to Commodore equipment.

The centre, within London's Tottenham Court Road branch opposite Goodge Street tube station, will display the complete current range of Commodore micros and peripherals. Gultronic director Sam Tulsiani commented "Christmas was very bouyant this year, and our major problems were supply and not demand. Commodore products are of a high standard, with a good range, and the company is stable, which is why we decided to invest in the centre."

The centre will be demonstrating and selling the 64, 128, 128D, PC and Amiga, with staff specially trained to handle the up-market machines. Having specialised in audio/video products since the Gultronics chain started in 1968, the centre is well equipped to demonstrate some of the powerful interfacing capabilities of the Amiga.

Sam Tulsiani of Gultronics in the CBM centre

Part of the Audio Marketing Group, Gultronics now has seven branches in the London area. You can contact the centre on 01-323 4612.

Meanwhile Lasky's is to become the first High Street chain to sell the full range of Commodore PC's, and at a substantially reduced price. The basic dual floppy PC10 is now down to £1,200, plus VAT.

Lasky's thirty largest outlets will be selling the PC10 and 20 in both colour and monochrome versions. The PC 20, with integral hard disk, will sell at £1,799 plus VAT, while the colour versions of the 10 and 20 will cost £1,599 and £2,199 plus VAT respectively. All four models will be offered complete with a free copy of the word-processor EASY, half-an-hour's telephone hotline support, and free installation. Acting general manager Chris Kaday commented "We have long believed that the business and consumer markets for PCs are drawing closer together. There is absolutely no reason why a truly low-cost micro should not sell through the High Street — provided it is backed by the same level of support available from a conventional dealer ... Lasky's are the ideal choice."

For more details, contact Commodore on 0536-205555, or Lasky's on 01-200 0444.

Confidence high

CONFIDENCE in the financially-troubled Commodore International still seems high, despite the technical default on bank debts of over $50m.

Results for the last quarter have just been announced, with a small operating profit of $1m turned into a loss of $53m by the closure of a Californian chip factory and other factors. Despite this, Commodore International continues to deny that there are any plans to file under Chapter Eleven, a provision of the US Bankruptcy Code which allows companies to carry on trading for a period without repaying debts.

In the UK, there has been yet another management reshuffle. Former marketing director Chris Kaday becomes acting general manager, while former general manager Nick Bessey moves to Commodore Electronics. Marketing chief Paul Welch, it is now confirmed for the first time, left the company before Christmas, and is now involved with a mail-order software company.

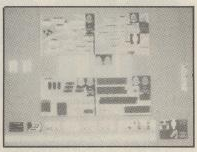
Adventures with pics

Incentive Software's successful Graphic Adventure Creator has now been translated for the 64/128. The GAC allows you to design your own adventures featuring full sentence entry (not just verb/noun), text compression, a flexible graphic designer, and full word length recognition. Release date is May 1st — for formats and cost contact Incentive Software Ltd, 54 London Street, Reading RG1 4SQ, telephone 0734-591678.

Data to tape for +4

PLUS/4 owners without disk drives can now save files from the built-in 3+1 software to cassette. **TAPE 3+1** is a software package which "wedges" into the machine's operating system. When saving files from the word processor, spreadsheet and graphics programs, the user is now prompted DISK OR TAPE D/T? This offers the added advantage that files saved on tape can be resaved to disk should the Plus/4 owner update later on. Unfortunately, because files from the database section of 3+1 are relative, they cannot be saved to tape.

TAPE 3+1 costs £4.99, and is available from the author, Azhar Chaudhary, at 105 Princes Street, Kettering, Northants, or through Commodore at 1 Hunter's Road, Weldon North Industrial Estate, Corby, Northants. Tel. 0536-205555 ext. 424.

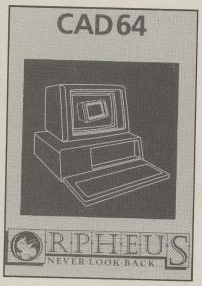


THE FORCE, from Argus' Mind Games label, is a police simulation costing £9.95 on tape for the 64. As Superintendent of Middleton you must control 16 zones, assigning forces a week in advance. Contact Argus on 01-439 0666.

THE THIRD release on the US Gold KIDS! label is **Wordrider**, *a spelling game featuring The Muppets. Details on 021-359 3020.*

CAD 64 in the frame

ORPHEUS Software's long-awaited CAD 64 is now available. The computer-aided design package features a full joystick-driven icon system for designing and amending 3D figures, which can be displayed as wire-frame, with hidden-line removal, or shaded. Objects can be viewed from any angle or distance, saved and reloaded, and animated with up to 200 frames.



CAD 64 comes complete with a 50-page manual, and costs £14.95 on tape and £18.95 on disk. Full review to come; contact Orpheus at The Smithy, Unit 1, Hatley St. George, Nr Sandy, Beds, SG12 3HP, 0767-51481.

A.C.E. +4

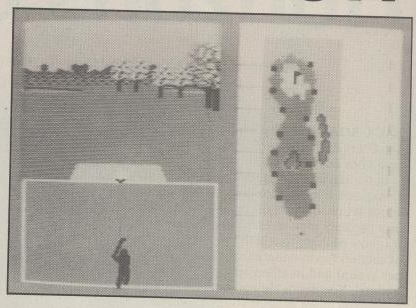
As promised, Cascade Software has produced a full 64K version of **ACE** for the Plus/4, featuring speech, two player option, and land, sea and air combat. Details on 0423-504526.

Ariola tees off

FORTHCOMING from Ariolasoft is the **Golf Construction Set,** designend by Tigress Marketing and programmed by the Hungarian Andromeda team.

Available on cassette at £12.95 or disk at £14.95, the simulation for the Commodore 64 enables you to build a golf course to your specifications, combining rough, fairway and green, bunkers, trees and water, then displaying a perspective view of the pitch you have created as you play. There's a full choice of clubs, weather conditions and strokes too, all controlled by menus.

The game includes four championship courses already designed for you; The Belfry, Wentworth, Sunningdale and Royal St George. The first twelve players to get their handicaps down to zero will be invited to a special playoff.



The Golf Construction Set is available from April. Contact Ariolasoft at Suite 105, Ashphalte House, Palace St, London SW1, 01-834 8507.

Team Mate and Scribos support 64

TEAM MATE Software has come up with a unique two-machine integrated business utility. The Team Mate package costs £34.95 in disk form, and consists of word processor, database, spreadsheet and high resolution graphics software for the CBM 64, backed with a similar program without the graphics for the Atari 800/130.

The word processor uses an 80-column screen format and includes full editing, search and replace, margin and printer command facilities. The database carries up to 999 records with 17 fields per record, and 38 characters per field.

The spreadsheet has 17 columns and 50 rows, and frequently used formulas can be duplicated throughout the spreadsheet.

The business graphics section allows you to plot pie charts with up to nine sections, bar charts, and line graphs. Text mode allows you to include titles for print-out.

Team Mate is available from Team Mate Software, Debden Green, Saffron Walden, Essex, CB11 3LX, 0371 830848.

Discom One is a utility program which overcomes many of the problems with using the Commodore DOS. Sixteen menu-driven routines are included to make your life easier, and producers Scribos claim that the package caters for both beginners and advanced users.

Facilities include complete backup, file backup, rename, scratch, unscratch, file protect, disk protect, and a 35 second disk format.

There are also useful protection facilities, such as a load protector which prevents loading of programs without a special symbol added to the file name, and a directory protector which makes it impossible to display the directory. Discom One is available through specialist dealers, or direct from Scribos, PO Box 11, Mansfield, Notts, NG19 9SL, at a cost of £19.95. Reviews of both products are forthcoming.

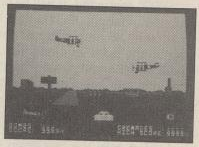
MPS-801 descending

MPS SOFTWARE has come up with an inexpensive idea to improve the quality of the popular MPS-801 printer.

The Descender ROM, costing £14.95, is easily installed with no soldering necessary. It replaces the 2732 EPROM containing the character set, redefining the print-out so that instead of the usual squashed g,j,p,q, and y, the 801 prints true descenders. Although the Descender ROM doesn't interfere with any printer functions, it cannot be used in any model of printer other than the MPS-801.

The Descender ROM will be available from specalist Commodore dealers such as Chromasonic, or direct from MPS Software, 36 Alexandra Grove, London, N4 2LLF, 01-800 3592.

Biggles



MIRRORSOFT's Biggles, based on the forthcomng film of the books by W E Johns, is due for release in May.

Horizons on the Net

***Richard and Douglas Hare** look at the latest on Compunet, including Party Line, MUD and the notorious alphanumeric GOTOs*

BACK AGAIN, and have we got some really hot C'net news for you? Probably not but here goes anyway.

In our last article we previewed **Party Line,** Compunet's new scrolling chat facility, which is now in operation with a far greater user capacity plus several extra commands. It is now possible to create your own groups of chatters (up to a maximum of eight people per group) and in effect split the P.L. into 'rooms'. You decide the name of these rooms and as you might imagine you can sometimes find yourself in rather unusual locations! You may move freely from room to room with the chat from the room you are in only being displayed. A feature exists which allows you to 'CALL' a user from another room — soon a command will be provided to "lock" rooms thus enabling private conversations to take place, a form of conferencing if you like. For us the P.L. system has improved ten-fold and we have spent many hours partying with people over the past few weeks.

GOTOs

A new version of M.U.D. is now available which is very similar in appearance to P.L. with the action displayed in a separate area from inputs, a vast improvement from its messy predecessor. We must stress this does not make it any less challenging as we found out to our cost — a mudder quickly gave us a sword, blade first.

The much praised **'Z'** is one of the latest programs to be marketed on C'net. There has been at least a couple of new games introduced every week as of late, namely **The Young Ones, Mercenary, A.C.E.** and the latest Level 9 adventures to name but a few, all at discount prices!

Shortly a helpful feature will be added to the system, "Alpha-Numeric Gotos", which will make accessing pages a lot easier. Instead of typing meaningless numbers in the 'GOTO' command, it will be possible to call it up by name e.g. GOTO "MUD". Initially this will be implemented on the more important/popular directories, but shall be made more widespread with time.

There has been a lot of activity in the Jungle recently with a veritable plethora of graphics and music demos. Hardly a day goes by without something new being uploaded onto the 'net from users such as Stoat, Tim, Mat, Black Adder, Yorc and Bob 'The Brush' Stevenson. Many of these programs have interesting techniques like disabling the border — an effect which has yet to be seen in a commercial product (but not for long we suspect!)

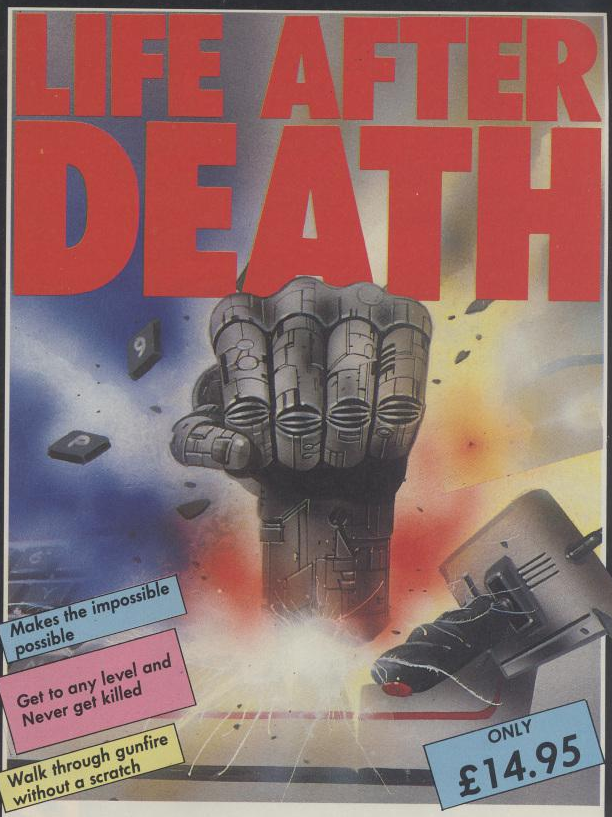
The Mighty Bogg, C'net's famous musician has composed several new masterpieces himself which demonstrate his ever increasing mastery of the SID chip. This seems an appropriate moment to congratulate Bogg for being voted C'net Celebrity of 1985, Yakus (Jeff Minter) was second and Dr Fogg came joint third with another user (modesty prevents us from revealing this entity's identity). Awards shall be presented to these celebrities at the Commodore Show in May. Thanks must go to Les Ducker who created and organised the competition himslef.

One quick item of late news: The Elite Club will soon become an official C'net section. The editor of this club, The Great Fran, promises a lively area with a whole host of music, graphics and games programs from various well known C'net contributors. So if you aren't netwise yet, now is the time to subscribe and download yourself a piece of the action. Until the next time, if we don't meet over the wires, SPLUNDIG VUR THRIGG!

Commodore Horizons is now logged on to the net. The ID is CBMHORIZ, and you'll be able to leave messages for editor Chris Jenkins or find out what's in forthcoming issues of the magazine. Also look out for Jenkins on Chatline (if he can stay awake late enough). If you have any comments on the magazine, ideas for articles, or graphics or programs you would like to see in print — you know we're just on the other end of your phone line. ■

KILLER GAME

LIFE AFTER DEATH



Q. *What is Game Killer?*
A. ***A revolutionary powerful cartridge that now lets you play all those impossible games without being killed!***
Walk fearlessly through gunfire, disaster and danger without a scratch.
Q. *Sounds difficult.*
A. ***It's simple. Just plug it in the back of your computer and press a button.***
Q. *You mean I can play my games all the way to the end.*
I don't believe it!
A. ***Yes – incredible but true! It works on all those thousands of games with sprite collision.***
Q. *Sounds like science fiction! I suppose it's available in 2001.*
A. ***It's here now!***
Q. *I'll believe it when I see it!*
A. ***Exactly, so why don't you go to your local computer shop.***

The **Robtek** Gamekiller is available from all good computer dealers.

Enquiries to **Robtek** (*formerly known as Robcom*) Ltd., 36 Market Place, Falloden Way, London NW11 6JP. Telephone: 01-209 0118.

Patent and copyright applied for

COMMODORE 64/128K
OTHER FORMATS AVAILABLE SOON!

Please send me _____ Gamekiller/s (£14.95 each) including 50p p+p
I enclose cheque/Po for £_____
My Visa no. is _____
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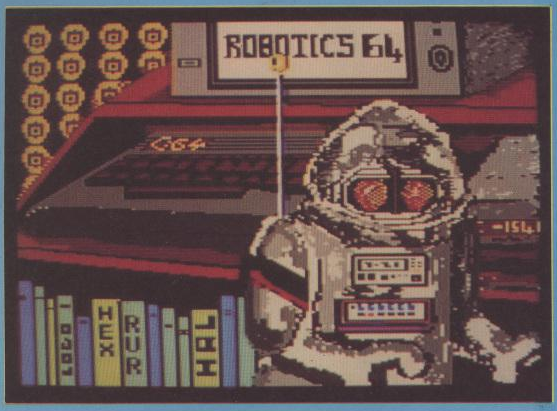
Allow up to 28 days for delivery

ROBTEK



▲ **Nigel Taylor's** *Robot was drawn using Koala Pad — just read some of the book titles!*

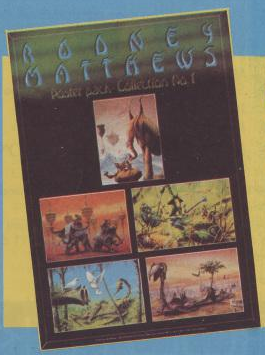
▶ *More post-industrial design from Compunet in the shape of the stark Steeltown*

▼ ***J E Abraham's** Rupert faithfully reproduces the style of the little cartoon bear*

▶ ***Bob Stevenson's** Juno skilfuly suggests a metallic finish*

GRAP RUNNE

More Commodore art from our C 'o month's winners each receive y mouse — but there were so ma y would like to see some

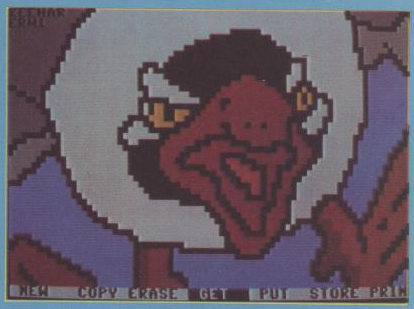


HERE'S WHAT YOU WIN

Each of the runners-up *will get a special bonus prize, the* Rodney Matthews Poster Pack Collection *from Picture Sales Ltd. This set of four posters from the acclaimed fantasy painter will adorn any micro-artist's wall!*

◀ ***John Kendrick's*** *Sinclair is a portrait of an industry figure you should all recognise*

▶ ***Chris*** *and* ***Ant West*** *(not Wood — sorry about the March misprint!) produced the seagull Keehar*



PHICS
ERS-UP

r C ompunet/Horizons contest. Last ive d a Wigmore House MS-2000 mar y good entries we thought you me of the runners-up too

▼▶ *The Macross Destroid and Reptile Bird were produced by* ***Clark Savage*** *using the Wigmore House Mouse*

The event every Commodore user is waiting for . . .

Organised by Database Publications

The 7th official Commodore computer show

Champagne Suite and Exhibition Centre, Novotel, Hammersmith, London W6

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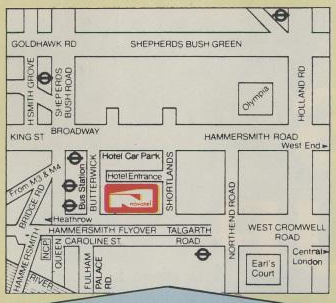

How to get there:

Novotel London is right by the A4/M4 and is only two minutes from Hammersmith underground station (for the West End, City and airport). For those bringing their own car, there is a large underground car park at the hotel.

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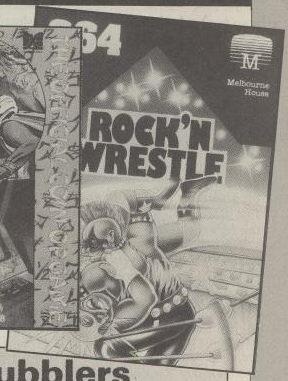
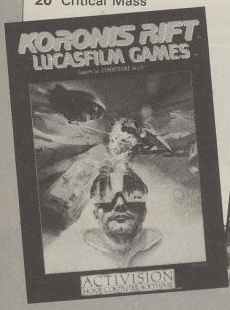
Charts

Top Twenty CBM 64 Games

1	Kung Fu Master	US Gold	£9.95
2	Rock 'N' Wrestle	Melbourne Hse	£9.95
3	Koronis Rift	Activision	£9.95
4	Commando	Elite	£9.95
5	Rambo	Ocean	£8.95
6	Winter Games	Epyx/US Gold	£9.95
7	Bounder	Gremlin Graphics	£9.95
8	Last V8	Mastertronic	£2.99
9	Mercenary	Novagen	£9.95
10	Kane	Mastertronic	£1.99
11	Kik Start	Mastertronic	£1.99
12	Eidolon	Activision	£14.95
13	Now Games 2	Virgin	£8.95
14	Little Computer People	Activision	£9.95
15	They Sold A Million	Hit Squad	£9.95
16	Yie Ar Kung Fu	Imagine	£9.95
17	Fight Night	US Gold	£9.95
18	Action Biker	Mastertronic	£1.99
19	Summer Games 2	Epyx/US Gold	£9.95
20	Critical Mass	Durell	£8.95





Bubblers

1	Arcade Hall Of Fame	US Gold	£9.95
2	Back To The Future	Electric Dreams	£9.95
3	Goonies	Datasoft/U	£9.95
4	Computer Hits (10)	Beau Jolly	£9.95
5	Zzzzz	Mastertron	£1.99
6	Master Of Magic	Mastertron	£2.99
7	Enigma Force	Monolith	£9.95
8	Desert Fox	US Gold	£9.95
9	Zorro	US Gold	£9.95
10	Lord Of The Rings	Melbourne	£15.95

Top Five CBM 64 'Non-games'

1	Music System	Rainbird	£14.95
2	Mini Office	Database	£5.95
3	Electrosound	Orpheus	£14.95
4	Azimuth 2000	Interceptor	£8.99
5	Music Studio	Activision	£12.95

Bubblers

1	Make Music With Mastertronic	Mastertronic	£1.99
2	Tasword 64	Tasman	£17.95
3	Machine Lightning	Oasis	£29.95

Top Five C16 Games

1	Big Mac	Mastertronic	£1.99
2	Tutti Frutti	Mastertronic	£1.99
3	Formula One Simulator	Mastertronic	£1.99
4	BMX Racers	Mastertronic	£1.99
5	Rockman	Mastertronic	£1.99

Bubblers

1	Kung Fu Kid	Gremlin Graphics	£6.95
2	Thai Boxing	Amco	£5.95
3	Daley Thompson's Star Events	Ocean	£6.95

Top Five Vic 20 Games

1	Crazy Cavey	Mastertronic	£1.99
2	Bullet	Mastertronic	£1.99
3	King Tut	Mastertronic	£1.99
5	Rip The Game	Mastertronic	£1.99

Bubblers

1	Psycho Shopper	Mastertronic	£1.99
2	Doodlebug	Mastertronic	£1.99
3	Vegas Jackpot	Mastertronic	£1.99

Data compiled by Gallup from a panel of specialist and chain stores, for the sales period ending February 15th.

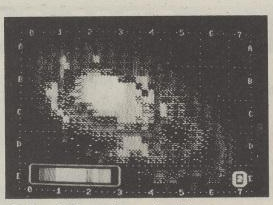
STARSHIP ANDROMEDA

*Ariolasoft's epic space adventure features twelve separate challenges — **Lester Dent** takes on the challenge of the evil dictator Alana*

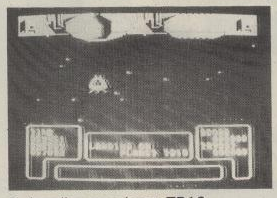
YOU HAVE sixty thousand seconds to save the universe. It may sound like a long time — but the challenge of **Starship Andromeda** is so great, that your abilities will be tested to the limit.

Starship Andromeda is the latest arcade adventure from Ariolasoft, and marks something of a departure. For a start, rather than being in the tradition of fast-moving shoot-'em-ups like Raid on Bungeling Bay, or tests of skill and reaction like Karateka, Andromeda is a combination of many types of challenge. Moreover, this five-part epic is written by the Hungarian Andromeda programmers, making it what must be the first galactic adventure to come from behind the Iron Curtain.

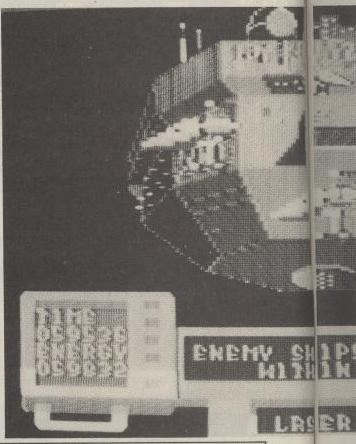
The disk version of Starship Andromeda — there's a cassette version in the works — comes in the usual Ariolasoft packaging, and contains precious few instructions. Part of the skill of the game is in working out which of the clues and messages given on the packaging are important, and which are merely red herrings. Not wishing to give too much away, I'll say at least that paying close attention to the information given will save you from cursing towards the end of the game!

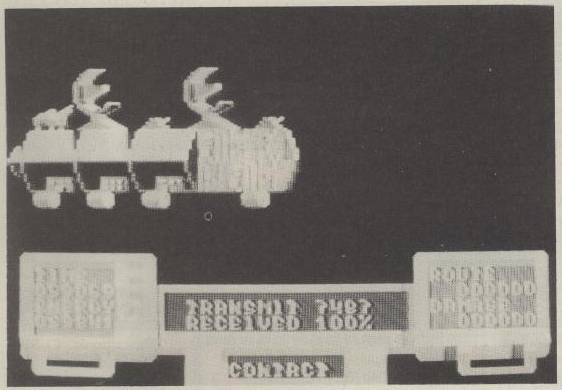


● *A whole galaxy at stake*

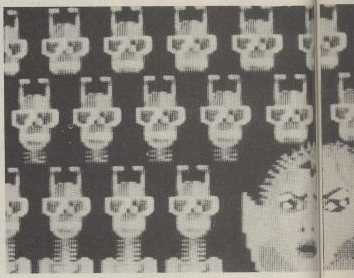


● *Landing on planet TB19*





● *Contact the freighters to learn Alana's location*



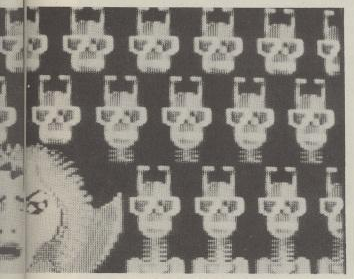
The plot is straightforward, but large in scope. Your ship, with its crew of fifty, is the last force left which can fight the dictator Alana and regain control of the Federation. To do this you must reprogram the Mindlord, Alana's computer with which she dominates the universe. Your weapon will be the Proton Lance, fuelled by the mysterious elements Trysst and Zyron, which is the only force capable of wresting the Mindlord's control key from Alana.

The game is in five stages, or Warps, and each starts in Realspace. With no clue to your destination, you must search space with your communication scanner, in the hope of picking up a direction message. Once you've achieved this, you must plunge into Metaspace in order to reach your destination.

Metaspace travel allows you to cover huge distances in a fraction of the time normally needed, but it is a dangerous journey. Your way is blocked by asteroids and meteors, and your only defence is a short-lived energy shield. As you fly through the ten thousand sectors of Metaspace, you must keep an eye on your location indicator. Once in the right quadrant, you must find a gateway out of metaspace, and manoeuvre through it, still avoiding the asteroids. Once you have done this, your problems are only beginning!

Each of the five Warps involves a journey through Metaspace, an arcade-type challenge, and finally the discovery of a password to the next Warp. The arcade sections vary from the straightforward to the fiendishly difficult. The first is a version of Lunar Lander, in which you must pilot your ship through narrow tunnels, skillfully using your thrusters to avoid the sides, and pick

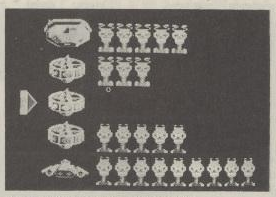
GAME: Starship Andromeda
MICRO: CBM 64
SUPPLIER: Ariolasoft
PRICE: £12.95 disk, £9.95 tape



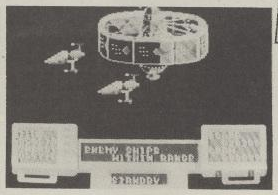
up deposits of Zyron from the tunnel walls. Having reached the bottom, your next challenge is to get out again.

On the next landing, you must reach a planet's surface through a hail of meteorites, in search of the element Trysst. Other arcade sections include a tank attack, in which you must match your scanner to the position and angle of the approaching vehicles in order to destroy them; and, one of my favourites, a pleasant little digging expedition on the surface of an asteroid, in which you use a bleeping scanner to locate and dig up deposits of Zyron, while shielding yourself against plummeting meteors and avoiding deadly Black Zyron.

In all the arcade sections, the animation is good and the designs attractive. It's yet more evidence of the skill of the Hungarian programming team.



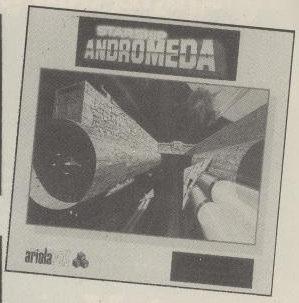
● *Fighting Alana's droids*



● *Defence fighters approach*

In the second Warp, the test is one of quick thinking rather than quick reactions. There are three base ships to overpower, but each is manned by Alana's androids. You must fly from ship to ship, overcoming the defence fighters to gain entrance, then leave your androids aboard. Don't be surprised, though, to find that once you have reached the third ship, Alana's have overpowered yours on the first!

On the third Warp, the problem is again one of quick thinking rather than straightforward joystick dexterity. You must locate a number of space freighters on their way to Alana's flagship, and obtain from them a destination code. This can only be done by locating their communication centres by quick scanning, then matching frequencies before they move out of range. This number-guessing game is like a variation of the old favourite Mastermind, but the addition of a time limit makes it even more challenging.

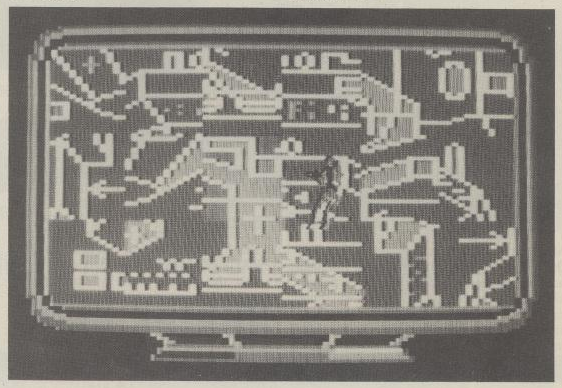


And so on to the fourth Warp, with your time running out and your crew members running low. Here you must locate and reassemble the scrambled blueprints for the Mindlord computers. The task isn't made easier by the fact that you are floating around in zero gravity on a jetpack!

And so to the fifth and final Warp, where you will take a heart-stopping walk in space and finally encounter the treacherous Alana. I'll keep the details to myself, since I don't want to cheat you of the fun of being exterminated just as the final solution is in your grasp.

Starship Andromeda is, in effect, a series of arcade and logic puzzles stuck together to form a whole. Fortunately, due to the sense of overall purpose which is built into the game, the whole thing works. Other games plotted in the same way — such as Beyond's **Superman** — were hopeless failures, both because the arcade sections were badly programmed and because there seemed to be no overall objective.

Starship Andromeda will keep you occupied for many hours, so it's fortunate that there's a gamesave facility. When the cassette version comes out, it will be on a C40 tape. This gives you some idea of the sheer amount of programming which is packed into the game, but you'll have to play it yourself to get the full sense of excitement. ■



MINTER MANIA

***Jumping Jeff** on Uridium, Mercenary, Gyroscope, Tramiel, and cheap chips*

GREETINGS once again Earthcreatures. I have had a fairly eventful few weeks, finally finishing my 16-bit work and just starting to get back into the Commodore again; I started at the end of January but had to break off to prepare for the launch of **Colourspace**, which was just amazing (lasers and Genesis in the Laserium)... but that's another story and the wrong machine as well!

On the Commodore front I still have a pretty heavy addiction to the excellent 'Z' zapper out of Alligata. Getting pretty hot at it too. Strange to see the return of the blaster games but I can't say I'm sorry... the trend is continued in Andy Braybrook's new one 'Uridium', which he was kind enough to send me. I must admit to approaching this with a little trepidation, coz it's been hyped to hell and back just recently. Not by advertising mind you, it's just that they must have some very skilful PR people at Hewson who've managed to get the thing into the editorials of just about all known computer magazines. You couldn't open a magazine without seeing the screen shot. Very skilful marketing strategy that — must save no end on advertising!! Anyway, back to the game, which is real blast 'em-to-kingdom-come death or glory stuff. It's a bit like a version of Star Force laid on its side and scrolling left-to-right. The action takes place over a series of large enemy spaceships; you zap back and forth overt these, strafing surface installations and grounded planes whilst being attacked by colourful formations of enemy ships and some absolutely beastly little homing droid thingies that give you a lot of hassle. Some of the ground features (denoted by heavy shadowing) you have to avoid coz if you run into them you blow up. Eventually a warning sounds and you have to land on a runway at the right-hand end of the enemy ship. Once landed, you have a reaction-test screen that determines your bonus, then it's bye bye enemy ship in a blaze of pixels and on to the next (there are 25 in all). The ships are well drawn, and the scrolling's OK but the best bit is your little ship which is most acrobatic, flipping and rotating all over the place. If you liked Star Force or Z then you'll go for this one.

Targ very much

I have also managed to escape from Targ in the past month, too; it took me about three days total playing time (including one session that went on till half-5 in the morning) but I had fun doing it. Despite first appearances, Mercenary is actually an adventure game, but the clever thing is that because you can actually see the exits to the North etc, people like me who never play Adventures will quite happily sit up all night playing. The whole thing could have been done the old 'you are in a hanger. doors lead to north and east. there is a spaceship here' sort of style, but take that plot and add Paul Woakes's World Simulator and the result is one of the best games I've seen or played. Hey Paul, what about a World Simulator Construction Kit? — the Mercenary equivalent of **The Quill**? Now that would be amazing...

Also on the game playing front I am still hitting **Sheep in Space** for a blast quite a lot. I am not as good as once I was, but for some reason the old thing's got its hooks into me again and I keep on booting it up. While on the subject of blasts from the past I came across the 64 version of Space Invaders that Commodore did. It plays exactly like the arcade one used to, even down to counting off bullets for the saucers and going underneath the bottom row and not getting killed. Brings back many a memory of the lunchtime Space Invader sessions I used to get into at university, sustained only by a can of Coke and a packet of jaffa cakes stashed on top of the machine and referred to between sheets...

Knopfler

Haven't had much new stuff for the Amiga, not since the awesome EA Deluxe Paint art package that came out a month or two ago and that makes Macpaint look like a blunt pencil. I hope something starts happening pretty soon on the Amiga front or else everyone will get fed up waiting and nip out and buy STs instead. Which would be a shame because the Amiga is an incredible piece of hardware; it's just unavailable and overpriced at the moment. And there is still no sign of the much-vaunted **Marble Madness** from EA. I hope it comes out soon; I'm beginning to think that it'd be quicker to wait for Melbourne to convert **Gyroscope** to the Amiga...

While on the subject of Gyro, I must admit to being slightly disappointed. While the gameplay is quite Marble Madness-y, and the backgrounds are very nice indeed, the gyro appears as a single, weedy, single-colour sprite, as do any aliens hassling you. Since these are the only sprites actually on the screen, you'd think that the program could have used four sprites to do a lovely big, detailed, spinning colourful gyro, and the other four for the alien, and they wouldn't even have had to do any plexing, except for the digits of the timer, which is stuck at the top of the screen, anyway.

So Commodore appear to be in dire straits at the moment, and I'm not talking Mark Knopfler here either. They keep on saying how they're not going to file for Chapter 11 (i.e. go bankrupt) but they are zapping the Corby plant and they didn't appear at Comdex or CES, leaving both scenes wide open for Atari. All this has got to be real bad news for the Amiga. I really hope Commodore don't blow it with the Amiga, thereby wasting the potential of the most exciting new micro ever to appear.

Maybe Commodore should get Uncle Jack back. Jack Tramiel is an amazing bloke; he built Commodore up to be one of the mightiest companies around, then as soon as he leaves the Commodore empire starts to crumble. Lots of people give him bad press, but I reckon he's a bit like Leto II, the God Emperor of Dune... people viewed him as a tyrant, but he sure could run the Galaxy... and look at what JT's doing for Atari! (Anyone who hasn't read **Dune**, by the way, blooming well ought to). (That's another thing... why hasn't someone licensed the game rights to Dune and brought out a game based on it? Mind you, it'd have to be very, very good...

Isn't it amazing the way everyone's suddenly turned on to Commodore 16 software? Last Christmas there were thousands of the little things sold off mega cheap, and after Christmas software houses were plagued by hordes of C16 owners all ringing up desperate for software. Just about the only people prepared were Gremlin, who already had a few titles, but there's a veritable tidal wave of stuff coming out for it now. Odd little beast, the C16, and not too bad in itself, sort of like a 40-column super-VIC but with amaaaazing colours, 121 of them, and you can have them all on the screen at once without resorting to any interrupt trickery. Commodore could nearly have got it right with that machine but they got it totally wrong. If it'd had 64K (memory is, after all, dirt cheap these days) and sprites (why they left off the sprites I'll never know) it would have sold like fury for sure. Just think how much fun we'd have all had converting our existing C64 games to go on a system with all those colours... if only they'd given it sprites and a few extra K.

There should be some hot new stuff coming out in the arcades real soon now, judging by what I saw at the Arcade Trade exhibition I went to in January. The next hot game will be a thing called **Space Harrier** out of Sega, which features the most amazing graphics ever seen on a game. The speed and quality of the graphics on this beast really leave the Amiga for dead. Mind you, it does have a 16-bit CPU running at 10 meg, and a video system with a choice of 32,000 colours! The game uses 1.2 megabytes of graphics definitions, and the actual code is 'only' 448 K! (That's 400 K more than my Stargate machine)... The top version of the game is mounted in a simulator-style booth that moves in response to the player's joystick motions. This is a game that you'll not be seeing ripped off onto the '64 in a hurry...

Time to go now, I have several planetfuls of graphics to design tomorrow and it's getting late. It'd be nice if I could be writing about how good Marble Madness is on the Amiga, next month... pull yer finger out EA!!! ■

Save the Galaxy from the evil Alana in

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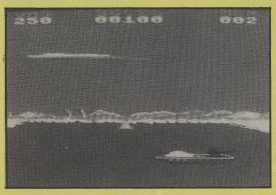
Activision's

GAME MAKER

Twenty game design packages for the 64 to win in our simple contest!

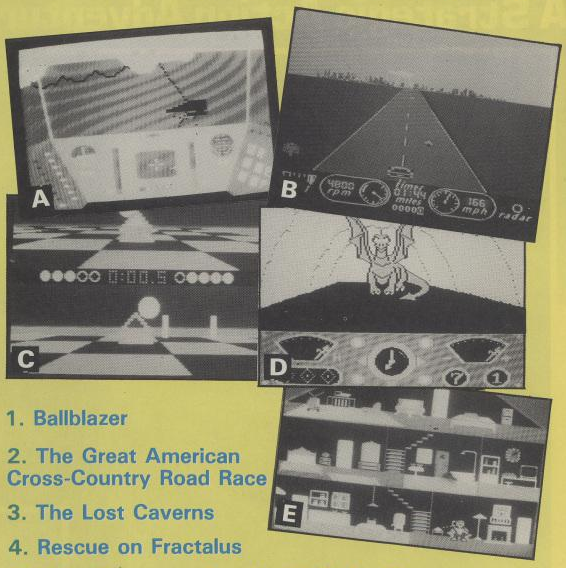
IF YOUR Basic isn't quite up to scratch, and machine code goes right over your head, you might have found it difficult to write your own games programs. It's one thing having plenty of marvellous ideas, but another matter when it comes to getting something onto your 64's screen.

Now **Activision** have the solution! **The Game Maker** package enables you to quickly and easily produce your own game programs with no knowledge of programming. It's all done through a system of menus, which enable you to define the sprites, scenery, sound effects, music and game rules. There's a full user manual which takes you step-by-step through the game design routines, and demos with the package which give you some ideas to start with.



The Game Maker normally costs £19.99 on disk or £14.99 on cassette, but we have TEN disks and TEN tapes to give away to the winners of our competition.

All you have to do is study the five game pictures, A,B,C,D, and E, and see if you can identify them from the list provided. There are ten games listed, so obviously some of them are fakes! — Clue — all the games are Activision titles. When you've figured it out, list the titles by letter and number — for instance, if you think that game A is Ballblazer, put A) 1 . . . and so on. Put your entry on a POSTCARD or the back of a sealed envelope, and post it to *Game Maker Contest, Commodore Horizons, 12/13 Little Newport Street, London WC2H 7PP,* to arrive no later than the last working day of April. Then DON'T FORGET to tell us whether you want a DISK or CASSETTE package should your entry be drawn out of the Editor's hat. All normal competition rules apply — results will be printed in the June issue. ■

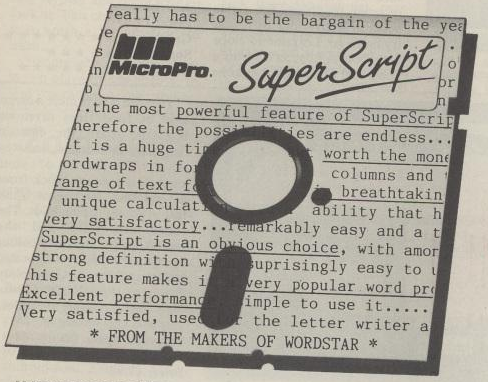


1. Ballblazer
2. The Great American Cross-Country Road Race
3. The Lost Caverns
4. Rescue on Fractalus
5. Little Computer People
6. Space Mission
7. The Eidolon
8. Turbo Racer
9. Barmy Bertie
10. Zapper

Previous Winners

TWENTY copies of Activision's Lucasfilm game Koronis Rift are on the way to the lucky winners of our February contest. The winners are: (Disk) A Tate, Dunblane; D H Rushton, Stoke-on-Trent; G Smith, Gresford; J Eagle, London; L Warwick, Thatcham; G C Johnson, London; D A Ashcroft, Moreton; P Derlack, Camberley; M Derhan, Rosscarberry; D Parish, West Wickham; (Tape) R Stambrow, London; B A Wotton, Melton Mowbray; K Grainger, Darlington; M F C Ward, Norley Wood; K Leese, Stoke-on-Trent; A Protano, Salford; D Cook, Blackpool; O Cunniff, Dunstable; R O'Connell, London; and P Griffiths, Glan Conway. TWENTY winners get three-packs of Llamasoft Vic20 games following our February contest. They are: C Parry, Storrington; T Boddy, Healing; M Croft, Lancaster; C Glazebrook, Ipswich; A Day, Sheerness; R Wheat, Nuneaton; S Bhana, Birmingham; J Jackson, Hazlemere; D Eaves, Southampton; M Lewis, Leeds; G Waterman, Basingstoke; I Jenkinson, Lowton; M Neesam, Rugby; L Valentine, Woodstock; V Nellist, Birmingham; G Hart, Skelmersdale; K Whelan, London; D Fearn, Brinsley; P Yarnold, Wool; and R J Ormston, Wolverhampton.

WORDAHOLIC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No future for you

Electric Dreams' latest, **Back to the Future,** is based closely on the movie of that name. The hero, Marty, must initiate just one kiss between teenage parents (this is before he was born, if you haven't seen the film) to ensure that they marry and fulfill the future he has come from. If not, that future will cease to exist — and so will Marty.

The more time George and

Lorraine spend together, the more likely they are to kiss. Bully Biff and 'Doc' Brown, inventor of the time machine which caused the trouble in the first place, hinder and help the hero.

Instructions are lengthy and the screen is crowded with locations, the case and various icons to help follow the action. The ramifications take a lot of mastering. In the end I wasn't sure it was worth it, and resorted to fixing fist fights between Marty and Biff, and trying to get Lorraine to elope with Doc. A pity, as it seems a good deal of thought has gone into making the idea playable, but I found it quite tedious and the soundtrack, one of the selling points, is tinkly and horrible.

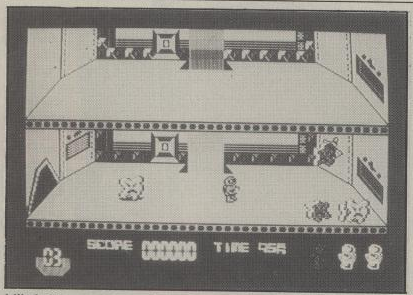
Tough luck, Marty. It looks as if your time isn't going to begin.

Program: Back To The Future, 64
Supplier: Electric Dreams/ Activision
Price: £9.95
Graphics: ★★★★★★★
Sonics: ★★★★★
Gameplay: ★★★★★★

Far out!

For instructions, **Space Doubt** presents a fold-out strip cartoon and a list of nine commands (up, down, left, right, fire, pause, unpause and start) on the reverse of the wraparound. At first I thought I had destroyed the plastic overlay by extracting the wraparound. Thne I realised it was meant to be like that. Then I began to think that, after all, I had destroyed it.

The game's a bit like that. Just when you think you're getting the hang of it, you get



killed. Your power pack runs out; you fall through a hole in the deck; the lift chucks you out on the wrong level or a bogloid you've just shot eight times eats you, regardless.

The idea is to protect a cargo load of food from ravenous bogloids, repair the damage they cause breaking in, and stay alive. The means of your survival is a power block from a vendomat. You must think fast to outwit the bugloids. The tunes are jolly and the backdrops are rich with colour like an incredibly overdecorated Italian restaurant. Good clean fun for an idle half hour or two. Not more, though, unless you're a real obsessive.

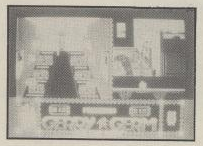
Program: Space Doubt, 64
Supplier: CRL
Price: £7.95
Graphics: ★★★★★★★
Sonics: ★★★★★
Gameplay: ★★★★★★★

Jolly germs

This has to be the most stomach-churning game ever. You play the eponymous Gerry, who, for his sins, has been cast out of the Institute of Infectology. In order to regain his position, he must progress through the body of his unfortunate host, progressively clogging things up and causing chaos until the poor man has a heart attack.

The action takes place in a series of organs such as the Blundder, the Punkreas and the Lungaroo, each of which is a surreal version of the real thing. One organ, for instance, is set up as the inside of a train, accompanied by appropriate chuff-chuff Rob Hubbard music.

As Gerry collects the waste products and fatty globules



needed to infect his host, the temperature rises higher and higher toward hert attack level.

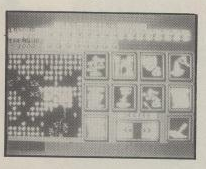
A completely pukey game which I'm sure you will all want to rush out to buy at once, accompanied as it is by a hilarious and scatological instruction sheet. Lay in a good supply of sick-bags.

Program: Gerry the Germ, 64
Supplier: Firebird
Price: £7.95
Graphics: ★★★★★★
Sonics: ★★★★★★★
Gameplay: ★★★★★★★

King for a day

So you want to be king? It's not as simple as you think (unless you were born to be king, of course).

According to Argus' game of kings, **The Evil Crown,** everything has to be properly seen to; your budget forecast for the year's scheming (called 'The Decree'); eliminating ravening wild beasts from your domain ('The Hunt'); winning the respect of your retainers ('The Tournament'); fighting your battles; dealing with a Peasant



Revolt (which only happens if you don't feed your peasants properly) and bringing in The Harvest to feed the peasants in the following year.

This is a game of planning and strategy with warlike interludes. It is icon-driven throughout, with attractive pictorial graphics. Your 'budget planning' is all done via a moving arrow. In this way it resembles the sort of sword and sorcery game where you must opt for a certain amount of wisdom/strength/etc., and then earn/lose more during the game.

After this you get the chance to knock your opponet off his horse, shoot at wild beasts, pursue a few peasants, via semi-interactive icons and moving-figure screens. It takes a bit of sorting-out, and the instructions (nice glossy package) could be easier to follow (and much more comprehensive). The graphics vary from galloping knights on horseback to aerial maps which you can alter at certain points in the game. No music — the sound effects are all bumps, beeps or white noise. Not bad.

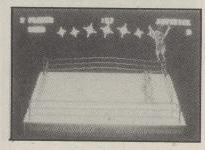
Program: The Evil Crown, 64
Supplier: Argus Press Software
Price: £9.95
Graphics: ★★★★★★★
Sonics: ★★★★★
Gameplay: ★★★★★★★

Slam-bang gang

Rock'n' Wrestle is Melbourne House's follow up to the popular **Way of the Exploding Fist.** The former was easy to play and decorative to look at. This one is neither, but it is worth a bit of effort to learn.

You are advised to play alone in two-player mode at first, so that you can grab, spin, stump, and suplex your opponent in relative safety. It's like mastering a complex dance routine — you make a grab. Have you actually made contact? If so, are you ready to spin?

The characters make realistic movements in real-time speed and three-dimensional perspective. With a tangle of arms and legs it can be hard to tell exactly what's going on. The idea is, once you have mastered the 25-plus movements, that everything will come naturally, you won't think about the joystick, only about pinning and piledriving your nine



opponents faster than they can kick or kneedrop you.

The 'rock soundtrack' is a games soundtrack rocked up a bit, but no great shakes.

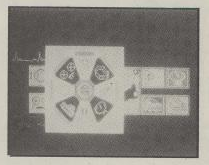
Once you have mastered the moves, you should be able to pulp your opponents to a beat with exhilarating speed and ferocity, and turn a few of your friends into enemies. Certainly repays persistence.

Program: Rock'n Wrestle, 64
Supplier: Melbourne House
Price: £9.95
Graphics: ★★★★★★★★
Sonics: ★★★★★★★
Gameplay ★★★★★★★ ★★

Zoidstars

The ancient race of the Zoidarians has been wiped out by a poisoned meteor storm. Now only their Android servants and their terrible war machines, the **Zoids,** survive. But soon even the warlike androids are threatened by an even *more* warlike band of mutant red zoids! The blue zoids hurriedly create a super-android-zoid, Zoidzilla, to face the red zoid leader, Redhorn The Great.

Into this situation falls a shipwrecked Earthman (you). A born survivor, he becomes a gladiator of the zoids. Realising that the red zoids must be



stopped before they take over the galaxy, he joins Zoidzilla in a mission to destroy Redhorn. Unfortunately, the single-minded Zoidzilla is blown to bits.

The red zoids bury the bits in eight batches under their domed cities. Now, armed with your tank zoid, you must recover and reassemble Zoidzilla before facing the mighty Redhorn.

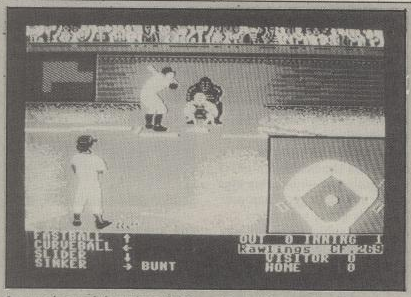
The 'eye' and operational centre is a cross-hair which moves freely over the screen to activate and deactivate icons and windows. Nothing is simple: to jam a radio station, you must land on it and combine a menu of waveforms to match exactly the transmitter's waveform. If you jam too many stations (or destroy too many enemy vehicles) your foes will home in on you faster — the decision is yours.

The business is accompanied by a soundtrack which is the most musical I have heard — more like an orchestrated score than a computer jingle — by Rob Hubbard. A complex and challenging game, streets ahead of the standard shoot-'em-up.

Program: Zoids, 64
Supplier: Martech
Price: £8.95
Graphics: ★★★★★★★★
Sonics: ★★★★★★★ ★★
Gameplay: ★★★★★★★ ★★

Good catch

The graphics in **Hardball** are indeed stunning in their close, accurate representation of the pitch on one screen, and the pitcher/batsman/catcher on another. The movements of the figures are dynamic and lifelike, once you've got used to the timing (batting is hardest), and getting successful hits depends on skill in menu choices and skill in timing. On the field screen, the ball loops over the pitch while its shadow follows it along the ground — dramatic and a great aid to locating the ball, as one player must control



the running and throwing of the outfielders, while the other directs the running batsmen.

As well as the large menu of named players, there is a choice of eleven types of game, including player vs player, player/computer vs player, player vs computer, and various priority combinations.

One for enthusiasts, but the pitching/batting sequence itself has some entertainment even for people with no bats or balls. The music is horrible, but you can turn that off.

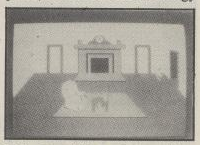
Program: Hardball, 64
Supplier: US Gold/Accolade
Price: £9.95, £14.95 disk
Graphics: ★★★★★★★ ★★
Sonics: ★★★★★
Gameplay: ★★★★★★★ ★★

No-one gnome

Time Tunnel is nothing to do with the venerated 60's SF series, and indeed seems to be a peculiar mix of elements in search of a game idea.

You play some variety of gnome, who, in order to become Gnome King (is that worth the effort, one wonders?) must wander through time searching for lost objects to free trapped gnomes from the pixie forest ... or something.

There's a store cupboard in which found objects can be kept, and a time machine which allows you to move to the different eras. Objects have to be used carefully; for instance, a log must be put on the fireplace, then shot with an energy



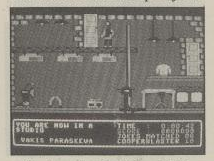
bolt, at which point another object appears. In that sense Time Tunnel has some of the sophistication, of Ultimate's **Pendragon** series, but since the graphics are not nearly so interesting and the music is dreadful, I can't see it competing.

Program: Time Tunnel, 64
Supplier: US Gold
Price: £9.95, £14.95 disk
Graphics: ★★★★★
Sonics: ★★★★
Gameplay: ★★★★★★

Bondage

One of the few "celebrity" games to show real invention and programming sophistication, **Basildon Bond** is based on one of Russ Abbot's comic characters. In the multi-screen arcade adventure Bond has to rescue Abbot, who is being held by a rival comedy act in a TV studio.

The bottom half of the screen includes a status display which tells you where you are and what objects you have collected. The aim is to match up objects



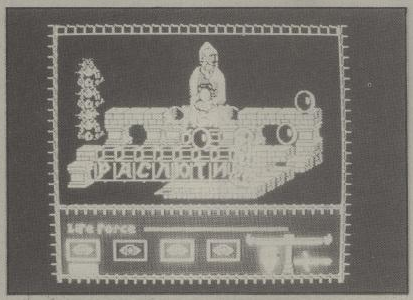
with clues obtained from hiding places, and place them in a computer to obtain matching jokes and punchlines. Rogue TV cameras and other hazards try to stop you, but you have the help of the superhero Cooperman if you get stuck. Unfortunately calling up Cooperman sometimes results in an attack from Blunderwoman, which causes more harm than good.

The puzzles involved are quite complex; for instance, before you can even activate the computer you need to find a floppy disk which is hidden quite far into the game. There's a five-hour time limit, with penalties for coming into contact with cameras, and judging by my progress so far this engaging game will keep you occupied for a long time. Nice colourful graphics and decent sound complete what is an attractive, if somewhat overpriced, game package.

Program: Basildon Bond, 64
Supplier: Probe
Price: £9.99 tape, £13.99 disk
Graphics: ★★★★★★★
Sonics: ★★★★★★
Gameplay: ★★★★★★★

Russian around

Rasputin is very much in the vein of Ultimate-style arcade adventures, with single-colour displays and dozens of finely-detailed, smoothly-animated figures. In this particular epic you take the part of a valiant Russian warrior pledged to destroy the evil Rasputin. To do this you must move through the 3-D chambers, avoiding terrors such as the flying eyes, and leaping from place to place with all the excitement of a kulak about to be dragged off by the Bolsheviks.



There are the usual objects to collect in order to solve the riddles of the chambers, and you have a sword and shield to protect you. Aside from a surface charm, Rasputin is distinguished mainly by the usual astounding Rob Hubbard music — this time a series of wild Russian folk tunes with authentic fiddle solos, which play faster and faster until you think your 64 will explode. There must be at least a megabyte of code in the music alone.

Program: Rasputin, 64
Supplier: Firebird
Price: £7.95
Graphics: ★★★★★★★
Sonics: ★★★★★★★ ★★
Gameplay: ★★★★★★

Chop-chop

Kung Fu Master is the official conversion of the arcade game of that name. It's very straightforward: you are the Kung Fu Master, kicking and punching your way through dragons, evil henchman, roly poly dwarves who grab your legs, killer bees and other nasties, to reach the captive maiden in the wizard's temple.

Action takes place in a long corridor, with enemies coming at you from both sides. During joystick play, the spacebar must be used if you want to toggle between kicking and punching. Punching earns more points with certain adversaries. You can shake the henchmen off if they grab you — but this uses up far more energy. When your energy is gone, you die.

The graphics are nothing special, but they're neat and tidy and well thought out. The soundtrack is tinkly and slightly

oriental, completely forgettable (the best kind). Your restrictions are tested by the speed of the game rather than any inaccuracies in the kick/punch/face-contact area.

This is the sort of game where you check the clock after being killed for the forty-fifth time, and find it's three o'clock in the morning. It's fun.

Program: Kung-Fu Master, 64
Supplier: US Gold
Price: £9.95
Graphics: ★★★★★★★★
Sonics: ★★★★★★
Gameplay: ★★★★★★★★

Arthur again

Dragonskulle is the fourth in the Sir Arthur Pendragon series. This time, Sir A. arrives on the Isle of Dragonskulle in his rowboat for a final confrontation with the Skull of Souls.

A row of icons at the top of the screen govern Sir Arthur's own powers, two of which he comes equipped with, and two of which he must find before he

can use them. Once inside the mountain, he's in a maze and must avoid the hazards (jumping eyeballs, falling rocks, and green things with long legs, to name a few) in his quest to find the Skull. Digging is handy, as it could replenish one of his five lives. On the other hand, it could remove one.

Nothing we have met so far kills Sir A. outright — he must make a positive effort to hang around in a risky environment to get eliminated. On the other hand, nothing he hurls his magic globes at seems to die, either. A battle of dodges and persistence.

Sir Arthur and his foes are attractively animated and have the endearing quality of old friends. There's nothing new or exciting about it, but it's a solid, well-designed D&D-style adventure, a must for any dedicated Sir Arthur fan, or (conversely) anyone who hasn't met him before. The rest of us have seen enough, so let's hope this is his final confrontation.

Program: Dragonskulle, 64
Supplier: Ultimate
Price: £9.95
Graphics: ★★★★★★★★
Sonics: ★★★★★
Gameplay: ★★★★★★

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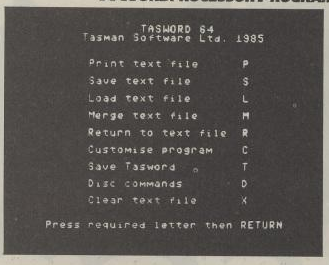

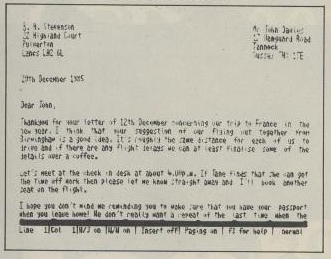
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Mr. John Davies
27 Hampstead Road
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20th December 1985
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Let's meet at the check in desk at about 4.00p.m. If Tone flies that she can get the time off work then please let me know straight away and I'll book another seat on the flight.
I hope you don't mind me reminding you to make sure that you have your passport when you leave home! We don't really want a repeat of the last time when the
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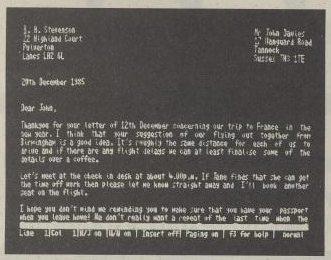
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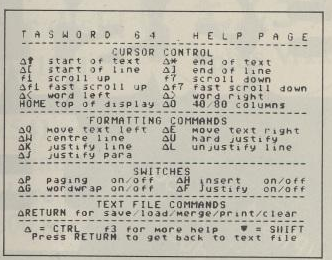
TASWORD 64 HELP PAGE
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Δ[start of line Δ] end of line
f1 scroll up f7 scroll down
Δf1 fast scroll up Δf7 fast scroll down
Δ< word left Δ> word right
HOME top of display Δ0 40/80 columns
FORMATTING COMMANDS
Δ9 move text left ΔE move text right
ΔN centre line ΔU hard justify
ΔK justify line ΔL unjustify line
Δ| justify para
SWITCHES
ΔP paging on/off ΔH insert on/off
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SOUND STUDIO

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The giant killer

Robtek's Game Killer cartridge, as seen on the BBC's Micro Live, offers you the chance to cheat your way through sprite-based 64 games. ***William Harper Littlejohn*** *looks at its capabilities and limitations*

INFINITE LIVES? Surely the ardent wish fo every game player, but up until now it's been a difficult task to modify games in such a way that you can gain an unfair advantage.

Since the games market developed to such a level of sophistication that days, if not weeks, of play are necessary to complete the more complex games, there has been a growing interest in "hacking" into programs to make life easier. Usually this involves the use of a reset switch (or a bent paperclip!) and a good knowledge of machine code.

Now, though, Robtek has come up with a simple and foolproof way to "cheat" which will appeal to all games players whose patience is limited.

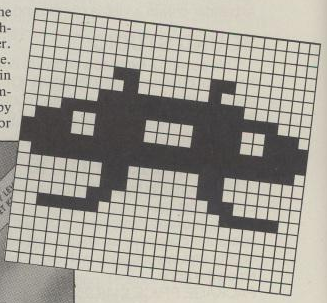
The **Game Killer** is an innocent-looking cartridge, a close relative to the Turbo series of programming tools. It plugs into the 64 or 128-(used in 64 mode) and offers you one simple but ingenious facility — the ability to disable at your desire the computer's sprite collision detection routines.

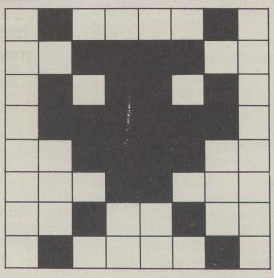
Sprites, as we all know, are the essential elements of most arcade-type games. The 64 is unusual in having sprite routines built into its hardware, unlike other popular micros such as the Spectrum, BBC and Amstrad where the sprites are "soft".

The 64's sprite system is particularly suited for games use. Up to eight sprites can be defined at once and displayed on the screen, each moving in any required pattern. One of th most useful facilities is "dominance" — choosing which sprite will have "right of way" when they pass each other on the screen. Priority is defined by the numbering system, one to eight. So, when sprites one and three meet, sprite one will appear over sprite three.

However, if you wish to activate another routine when the two sprites meet — say an animated "death" sequence or an explosion — this can be done by using the collision detection routines.

You can detect two types of collision using the 64's built-in routines. The first is a collision between two sprites, and the second is a collision between a sprite and the background. Register 53278, for the technically minded, is the sprite collision register. It contains eight "bits", one for each sprite. If one sprite is touching another, its bit in register 53278 will be set to 1. Any combination of collisions can be checked for by PEEKing this register, either in Basic or machine code.





Checking for collisions with the background works in the same way, only in register 53279. The background can consist of character graphics, text, hi-res, indeed anything except the basic background colour and the border. Multi-colour 1 background graphics don't register either, which is handy if you want a sprite to be able to pass over certain background elements.

The Game Killer works by disabling all these sprite collision detection routines. On switching on the computer with the cartridge plugged in, the first thing you see and hear is an all-singing, all-dancing display featuring music by the very wonderful Rob Hubbard. Once you have forced yourself to turn this off, by pressing the space bar, the 64 resets and you are ready to load your game.

Robtek's programmers have tested the cartridge with hundreds of games, and have not found one which fails to load. I must admit that I had no problems either. Once your game is running, you have three options. Simply by pressing the Game Killer's reset button, you can disable all the sprite collision detection routines. The screen goes blank for a moment and then the game continues from the point you left off.

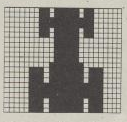
Alternatively, you can disable just the sprite-sprite routines by pressing the reset button while holding the joystick in the UP position. Lastly, you can disable sprite-

background collisions only by pressing the reset switch while holding the joystick DOWN. To deactivate the Game Killer, once you have reached the point in the game where you want to be, you press the reset switch while holding the fire button down.

Soft sprites

Bearing in mind that if you try to deactivate the Game Killer while your player is in a part of the screen where it would not normally be you risk crashing the game, the Game Killer seems to work very well, is easy to use, and does not appear to interfere with any software I've tried. However, don't start thinking that the Game Killer is the instant solution to all games.

For a start, some games are totally devoid of sprite collision routines; things like text and graphics adventures, some kinds of arcade adventure, simulations, vector and fractal graphic programs like **Mercenary** and so on. In these cases Game Killer can do you no good at all.



Even some games which appear to use sprite collision routines cannot, in fact, be influenced by Game Killer. **Uridium,** Andrew Braybrook's recent space shoot-'em-up, does not appear to use the 64's hardware sprite collision routines at all. Because of the speed, number and complexity of the animations needed, Andrew appears to have defined his own "soft" sprite routines.

Whatever you do with the Game Killer, the defence ships can still zap you and the background obstacles are still solid! **Way of the Exploding Fist,** Melbourne House's karate caper, evidently uses sprites, but apparently does not use the usual collision routines — again, the Game Killer has no effect.

Still, there are lots of games on which the cartridge is eminently useful. On Alligata's **Who Dares Wins,** you become immune to enemy bullets, and capable of walking on water and quicksand — a real miracle. Using the Game Killer allowed me to get to parts of this program I'd never seen before — and then of course I could disable the cartridge and carry on with a fair fight. On **Impossible Mission,** the peril of the guardian robots is removed forever; just walk through them and their electric beams, and they won't even know you're there.

On Mastertronic's **BMX Rider,** you'll find that the ability to ride through walls, water and hills soon allows you to complete the course — and find a mass of undefined characters at the end, instead of the legendary last screen! Evidently the game was meant to be so difficult that no-one could ever complete it, but with the Game Killer it's simplicity itself.

Ocean's **Transformers** is another good candidate for the Game Killer — if you've never been able to retrieve all the energy cubes because the Decepticons harrass you to death while you're searching, you can now disable the sprite-sprite routines and simply ignore their attacks. However, should you try to disable the background collisions there's an unexpected side-effect — your player becomes invisible!

Overall, taking the cost into account the Game Killer is going to be the one product every dedicated player will want to buy. But while it's very clever, remember it's not magic. A sound understanding of the way the sprite collision routines work, and of the way sophisticated programming sometimes sidesteps them, will ensure that you don't expect miracles with every single game you own! ■

Product: Game Killer cartridge
Micro: 64, 128 in 64 mode
Price: £14.95
Supplier: Robtek, 36 Market Place, Falloden Way, London NW11 6JP, 01-209 0118; available through major chain stores and specialist retailers.

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PRO16 Sequencer for Commodore 64 and Apple IIe *(See review in E&MM, February 1986)*
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● Displays standard music notation on screen with auto correction ● Print out facility ● Handles complex music accurately, including chords containing multiple note durations, overlapping beamed groups ● Step time editing allowing you to set, insert, or delete notes and rests at any place ● Handles ties, flags and beams, rests, split points, enharmonics and any time and key signature.

Creative

Musical movement

The latest flood of music products confirms that this is the biggest growth area for micro use.
***Tony Mills, Chris Jenkins** and **Chris Whitcombe** report*

SOUND EXPANDER

COMMODORE'S **Sound Expander** FM Sound Module turns the 64 into a music computer increasingly similar to Yamaha's powerful CX-5. The sound chip in the Expander is manufactured by Yamaha, and offers eight-note polyphonic playing of highly realistic sounds. The Expander plugs into the cartridge port of the 64 or 128, and has a phono output socket.

The basic layout of the disk-or-tape software resembles a "Play-Along" keyboard controlled either from the computer (perhaps using a Music Maker clip-on keyboard) or from a forthcoming full-size mechanical keyboard connecting to the Expander's left-hand multipin slot (first shown at the Ideal Home exhibition in March) routines for communicating with MIDI, the universal synthesizer interface increasingly fitted on inexpensive keyboards starting around £300, are already in the software, and a MIDI interface fitting into the top cartridge slot will become available soon.

Options

Basic playing options include normal or single finger chords, octave transpose (vital if using the Music Maker keyboard), Ensemble On/Off for richer sounds limited to four-note polyphonic playing, Chord Memory, Programmable Split point, variable Border Colour and so on. Splitting the keyboard allows you to play two sounds at once — perhaps a Bass Synth with the left hand and Piano with the right — and there's a good selection both of imitative and of abstract synth sounds.

Comprehensive sound programming

software is forthcoming although at the moment it's only possible to adjust the overall brightness of a sound. There are twelve preset rhythm accompaniments; each have their own arrangement of bass and arpeggio patterns and lifelike percussion sounds. The "Riff Machine" option produces complex patterns with percussion and accompaniment sounds in various styles — Country, Pop, Disco and so on — and these can be chained together in almost any order. This selection is more for entertainment than for serious musical application through, since it's not possible to play along with the riffs.

Forthcoming is an FM Composer package which will allow you to create length-voice pieces. The sound output of the Expander can be sent either to the TV monitor or to a hi-fi or other amp.'

The various menus of the Expander software pull down in a very simple manner and are colourful and easy to use. The package comes with a set of chord stickers for the computer keyboard and a simple song book with a chord chart; the main display flashes up all notes played on a music stave, so the package as a whole can be highly educational.

COMMODORE's new music packages are launched on March 3rd. CBM 64, cassette deck, expander, music keyboard and software, £330; expansion system without micro or cassette deck, £150.

Unit: FM Sound Module
Price: £99.99

Unit: Sound Sampler
Price: £69.95

Software: Sound Studio
Price: £14.99

Enquiries: Commodore UK, 1 Hunter's Road, Weldon North Industrial Estate, Corby, Northants. 0536-205555.

SOUND SAMPLER

LESS educational but even more fun is the Commodore Sound Sampler, a similar module with two added controls for Feedback and Output Volume. This unit records sounds digitally through the small microphone provided, and allows you to change their pitch from the computer or music keyboard. Musical dogs, cars starting, rude noises and more conventional sounds such as drums, orchestras and more can all be yours for just £69.95, the maximum sample length being 1.6 seconds (which is longer than it sounds!).

For drum machine applications the software has a Quattro Sampling mode which allows you to take four shorter samples and sequence them in sixteen-beat patterns — Drums and Latin Drums are provided on the disk version as examples. Any sampled sound can be displayed as a waveform and neatly edited using the cursor keys, and it's also possible to transpose any sound over ten octaves. A Loop can be defined to repeat either the whole of a sample, or just a short portion of it to give a keyboard hold effect — for instance if you've sampled a church organ.

The Sampler also acts as an Echo device with a maximum delay of 1.6 seconds and

the number of repeats set by the Feedback control on the module. It also acts as a Pitch Convertor which can raise or lower the pitch of your voice or any other sound by up to one octave, with other musically useful intervals such as fifths and thirds also available. This section of the software is handy should you want to sound like Pinky and Perky or Prostetnik Vogon Jeltz, or more seriously if you want to thicken up vocal sounds during recording.

The Sound Sampler is enormous fun and just about of high enough quality for semi-pro recording purposes. Certainly you'll start listening to chart records with a more critical ear once you realise how easy sound sampling can be. Bear in mind though that in normal mode it will only replay one note at a time (it's monophonic), and you'll need the Music Maker clip-on or the full size keyboard to get the best from it.

SOUND STUDIO

EVEN MORE affordable is the Commodore Sound Studio, a disc or tape package for synthesis and composition using the SID sound chip which is compatible with the Music Maker keyboard.

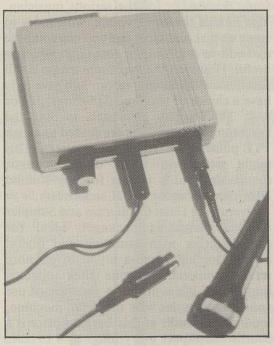
60 preset sounds are available and there are two main pages for synthesising your own sounds. Page A allows you to set Waveshape, Pulse Width Modulation and Depth, Attack, Decay, Sustain and Release, Vibrato and Portamento Depth, Filter, and Oscillator Sync (for metallic effects). Page B allows you to set the filter Cutoff point, ADSR, Resonance, LFO sweep and Master Volume. Full joystick control is possible and your new sounds can be saved to disk.

The Studio Sound Editor can be used to record melodies in real time or step time one voice at a time. Real time pieces can be edited to remove mistakes and three additional voices can be controlled if you use a MIDI interface to a professional synthesizer.

Various time signatures including 3/4, 4/4, 5/4 and 6/4 can be recorded, tracks can be deleted and transposed and completed tracks can be saved to disk. The handbook includes two rather complex pieces of music for you to struggle with and some helpful basics on the physics of sound and design of synthesizers.

Datel's drumsynth

DATEL'S ingenious sampler/drum machine combination for the 64 is a development of their sampler for the Sinclair Spectrum, but is much superior both in hardware and software terms.



The ComDrum and Sampler hardware packages are virtually the same: flat plastic cases plugging into the 64's user port, and having audio input, audio output and trigger output jack sockets. The sampler also has an input level pot, and comes complete with a lead to plug its output via the 64 through a television rather than an external amp.

You can purchase the packages in several combinations; sampler hardware and software alone, drum machine hardware and software alone, or, once you have bought the sampler, you can buy the drum software to run on it. Confused? You won't be — once you have heard the quality of these products, you'll want the whole lot.

Taking the sampler first, it has very obvious similarities to the Commodore sampler. It comes complete with a simple plug-in microphone, and operates through a system of menus. The main menu allows a sample to be recorded from a microphone or line level source. The recording is triggered by the sound itself, which is an improvement on the Commodore sampler's method of hitting the space bar, and the threshold level is of course variable.

You can then play back the sound you have recorded. Quality is fair, with 25KHz maximum sampling rate at a typical bandwidth of 6 to 7 KHz, according to the sample lengths.

Like the Commodore sampler, the Datel sampler includes realtime effects options. These include echo and reverb with variable speed and feedback, sample overdubbing, sample with echo, a ring modulated "Dalek" voice, and so on.

Perhaps the best part of the sampler software is the sequencer. This allows you to edit and rearrange your sample, by choosing from eight "blocks", set a repeat loop speed, then play tunes on the QWERTY keyboard. In its favour, this is a facility which is not available on the Commodore

STEINBERG 16

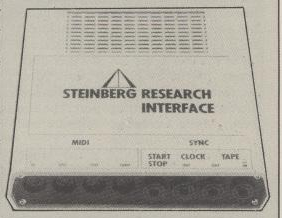
HAILING from Germany, the Steinberg range of music software is headed by the **Pro 16 Sequencer** which operates through the Steinberg MIDI Interface. It's a totally professional compositional system for MIDI synthesizers and drum machines, but is very easy to use, being laid out almost entirely on one screen.

16 polyphonic tracks of music can be recorded in step time or in real time with a metronome, the maximum length of one section being 64 bars of any time signature. 256 sections can the be chained together to form a Song which can be stored to disk.

Each track can operate on a different MIDI channel and the interface allows you to sync to a MIDI drum machine or to tape (a smaller and cheaper interface has these functions as an optional extra).

One unusual aspect of the package is that many parameters such as tempo and MIDI channel can be changed while the music is playing. Moving bars indicate activity on each channel and the presence of Velocity information, and other readouts show bar and beat number, memory remaining and so on. Total capacity is 8000 notes.

Many musicians are still put off computer systems, preferring less powerful stand-alone units, but at the price the Steinberg software running on a CBM64 is by far the better deal, even though it's as dodgy as any micro-based system for live work. But bearing in mind that Casio's superb MIDI-equipped CZ-101 synth is now obtainable for around £290, even a "professional" music package is now within the reach of the enthusiastic amateur.



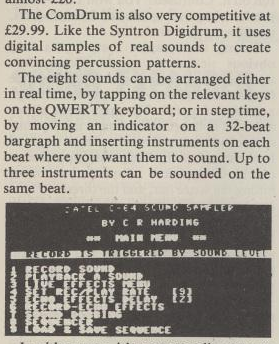
Unit: Steinberg MIDI Interface/Pro 16 software
Price: £135 approx/£90 approx
Enquiries: 68 Wilsdon Way, Kidlington, Oxfordshire, OX5 1TX, 08675-5277.

sampler; but you must remember that the Datel sequencer is realtime only, so it will faithfully replay any mistakes that you make, and it is also impossible to synchronise it with any other instrument, whether MIDI, Roland DIN sync or whatever. Sequences can, though, be saved to tape or disk.

Aside from that, the Datel Sampler is well worth checking out, especially since it undercuts the Commodore sampler by almost £20.

The ComDrum is also very competitive at £29.99. Like the Syntron Digidrum, it uses digital samples of real sounds to create convincing percussion patterns.

The eight sounds can be arranged either in real time, by tapping on the relevant keys on the QWERTY keyboard; or in step time, by moving an indicator on a 32-beat bargraph and inserting instruments on each beat where you want them to sound. Up to three instruments can be sounded on the same beat.



In either case, it's easy to edit patterns once you have built them up.

Three sets of drum sound are included; a straightforward rock kit, a Latin kit and something indefinable which seems to have some Simmons digital sounds. In each case, I suspect that the samples are themselves taken from digital sampling drum machines. The biggest drawback, as usual with sampled percussion sounds, is that there are no long cymbal sounds. There just isn't enough memory available to store the necessary information.

The main menu consists of six self-explanatory options; LOAD & SAVE SONGS, PLAY SONGS, PLAY LIVE DRUMS, COMPOSE & EDIT RHYTHMS, EDIT SONGS and LOAD DRUMS.

Some example songs are included on the disk for your entertainment. A pattern can consist of up to eight 32-beat bars, and a song of up to 16 patterns, each with up to 99 repeats. Having composed your song you can give it a title and copy it to the Song Library, which can store eight songs. Patterns can be transferred from one song to another if you wish.

The Comdrum offers some facilities which are not available on drum machines costing more than £200, but at the same time it has some drawbacks for the serious musician. You have a choice of voices, with more to come on disk and tape; and you can compose and edit in step time or real time, which is useful. However, the maximum tempo is still pretty slow for some reason, and you only have a choice of two time signatures, 3/4 or 4/4. The biggest drawback is that the synchronisation facilities are limited to a high TTL pulse at the end of each pattern. This might work with some older analogue sequencers, but is useless for any Roland DIN sync, Korg or MIDI sequencers.

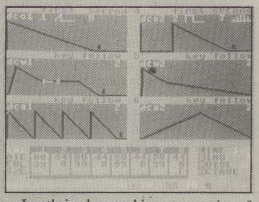
Overall the Datel ComDrum and Sampler are very engaging packages, ideal for experimenting with sampling and digital percussion, and have a lot to offer more serious musicians despite their obvious drawbacks. It's a pity that you cannot use your own samples with the drum machine, for instance; still, at this bargain price it's churlish to expect everything! ■

Hardware: Datel Sampler
Micro: CBM 64, 128 in 64 mode
Price: £49.99
Hardware: ComDrum
Micro: CBM 64, 128 in 64 mode
Price: £29.99
Software: ComDrum, for use with sampler
Micro: CBM 64, 128 in 64 mode
Price: £9.99
Software: ComDrum extra samples, 32 per disk
Micro: CBM 64, 128 in 64 mode, with ComDrum and software
Price: Approx £5.00
Supplier: Datel Electronics, Unit 8, Fenton Industrial Estate, Dewsbury Road, Fenton, Stoke-on-Trent, 0782 273815.

JORETH LINK

JORETH'S **Music Composer** hardware and software system for the 64 has now been extended by the addition of packages intended for users of non-Joreth MIDI interfaces. The Joreth interface is one of the few to use the 64's user port, leaving the cartridge port free. Most interfaces, such as SEIL, Jellinghaus and Microvox, use the cartridge port. The new Joreth Music Composer software will now be fully compatible.

Another new product is the **Music Linker System.** The disk, which contains an option for loading from the original MCS, is able to maniulate real-time music files, allowing a number of important new features. These include recording while music loops are playing, definition of 128 sub-loops within the eight tracks, nested sub-loops with direct GOTO commands, printer output with comments, and an enhanced realtime editor. The Linker is also available for the Joreth AL25 MIDI interface or the cartridge port interfaces.



Joreth is also working on a series of MIDI synthesiser sound editing packages. The first is for the Casio PD series, including the CZ-101; forthcoming is a tone editor for Yamaha instruments including the DX7 and TX7.

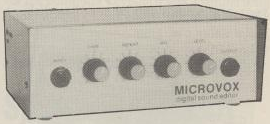
For more details contact Joreth at PO Box 20, Evesham, Worcs, WR11 5EG. ■

MICROVOX +

THOSE OF you who read the article on the **MICROVOX** digital sound sampler in the November issue of CH may be interested to hear of the latest update for it. As an optional extra, you can buy a replacement Cartridge/Lead which has the software built-in on a ROM chip and a few other goodies besides. Likely to retail at £69.95 it may, at first sight, seem a bit expensive but when you consider the extras you get, the price appears not so unreasonable.

The EPROM-PRO will bring up the System Index about 5 secs. after switch-on. No more waiting for the Disk to load. Calling up Page 2 will select the Waveform Editor to which has been added an AUTO LOOPING TOOL. In order to LOOP a sound on the 'standard' version, one had to use SEGMENT mode and search for the best points to start and end the loop. With the ALT, searching for the 'best' places is automatic. This does not mean that the computer will necessarily create a glitch-free loop. It will, however, find likely points fairly quickly, making the search for that elusive 'perfect' loop a whole lot easier.

The Special Effects section is where the major improvements has been made. The EPROM-PRO will give you, as well as the Digital Delay, HARMONISING, PHASING, FLANGING, CHORUS, SAMPLE+HOLD and one or two other Modulation effects. I have given this section a good bashing and all the options, particularly the Phasing and Flanging, are absolutely brilliant.



There is one new feature in the MIDI Controller. VELOCITY SENSITIVITY has been added, with 3 choices:— FILTER (which determines the Brightness of the sound), VOLUME (obvious!) and FILTER + VOLUME.

With the EPROM-PRO, the SEQUENCER that appears on the 'standard' version is no longer available. From a purely personal point of view, I don't mind that in the least. Within the set-up that I am using it was superfluous and, therefore, a waste of memory. You'll have to decide for yourselves whether or not the same applies in your situation.

I have to say that I am as impressed with the EPROM-PRO as I was with the MICROVOX itself.

Although it seems, initially, a little expensive, that is far from the case. Most musicians would not think twice about spending £40 or £50 on a good Phaser or Flanger, so, considering the other facilities included, it's a snip. At £300 for the Microvox and EPROM-PRO, it's a bargain.

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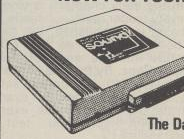

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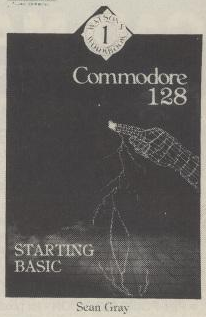

Sean Gray

Get started in BASIC on the C128 using this carefully structured, step by step guide to the computer and its BASIC. Each command is examined thoroughly as it is introduced and incorporated into sample programs.

The book teaches by means of projects, providing useful, interesting and entertaining programs for you to use long after you've finished this course. You'll soon graduate to modifying programs to suit yourself and next onto creating your own masterpieces!

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C128 sound and sprites

The third and final part of ***Tony Harrison-Smith's*** *series on the advantages of the C128's Basic V7.0*

THE MAIN difference between 64 and 182 Basic is the method of creating and controlling sprites. The new commands can be divided into three areas, creating the sprite, controlling the sprite and reporting back on the sprite's status.

Sprites

The C128 allows sprites to be defined in three ways, the original C64 method of pokes, a new built in sprite editor or convert a high-res drawing from a graphic screen. Obviously I will not deal with the original C64 method as this has been well documented over the last couple of years. The built in sprite editor on the C128 is switched on by the command **sprdef**. A 24x21 character grid is displayed in which sprites are displayed and edited. Sprites can be called from memory, edited, copied onto other sprites and saved back into memory. The third method of sprite formation is by defining a sprite from a area of a high-res graphic screen. The commands **sshape** and **gshape** allow an area of a graphic screen to be saved as a sprite or else display a sprite in that area of screen. Sshape will store the sprite data as a string variable. To move sprites to and from string variables, th command **sprsave** is used. Sprite data can be written to and loaded from disk in binary form by using the commands **bload** and **bsave.**

Sprites are switched on and off by using the command **sprite.** This will designate the sprite number, foreground colour, priority, expansion in X or Y, multi-colour or standard mode and whether it should be switched on or off. Therefore once a sprite is in memory, to display it you only need to use one command. If multi-coloured sprites are to be used then the extra colours are set by the **sprcolor** command. This will set multi-colour 1 and 2 for all sprites. Once the sprite is on the screen **movspr** allows the sprite to be positioned or moved on the screen. The movement can be controlled by either setting its next position or by specifying angle and speed. If the latter movement is chosen then the sprite will continue to move on its designated path until the speed is reset to zero. The moving sprite will 'wrap round' the screen, i.e. if it goes off the bottom of the screen it will reappear on the top of the screen.

The final set of functions are for reporting the current status of the sprites. To check which sprites have collided, and with what, the function **bump** or the command **collision** are used. The function returns a number which represents an eight bit binary code. The bits which are set to 1 represent the sprites which have collided. The collision command allows the program to jump to a designated subroutine when a collision has occured. For checking on the attributes of a sprite three functions have been included. The sprite's status is displayed by **rsprite** and its position by **rsppos**. The colours of a multi-coloured sprite are returned by **rspcolor**.

The sound on the C128 is exactly the same as on the C64. The improvement is the ease of use. The commands for manipulating sound comes in two areas. The first is to produce a sound effect or note and the second is to play and control music.

To produce very effective sound effects the command **sound** is included. Unlike most other computers this does not just produce a beep, it can produce anything from a police siren to a helicopter noise! The sound command allows the setting of voice, note, duration, sweep between max and min notes and last but not least the waveform. To hear some of the sounds that can be produced, run program 3. This gives random sounds using just the sound command.

To play music, several commands have been added. The volume is set by using **vol** and the speed of the tune by **temp**. With the C128 there are ten preset envelopes provided, roughly imitating instruments from drum to guitar. In addition to the presets any of the envelopes can be modified using the **envelope** command. This allows weird and wonderful sounds to be created. For the more musically sophisticated of you, filters can be switched on or off by the command **filter**. To make use of all the previous commands the command **play** is used to play a set of notes. Play reads a string of elements that represent the tune. The notes are specified by the letters A to G and sharps, flats, lengths and octave can all be specified within the string. The envelope, volume and octave could be changed for each consecutive note if you required it.

Compared with the C64, which did not take advantage of any of its abilities, the controlling of graphics and sound on the C128 is paradise. There are thirty new commands to help with the programming, of which nineteen of these are additional to the C16 and +4. Overall I feel that these commands wil be a great boost to programmers who, like myself, could not be bothered to write out hundreds of poke and data statements just to get any form of reasonable graphics or sound.

Looking back to my original question in part 1, I think that the claims for the improved basic on the C128 are justified. These articles have only scratched the surface of the C128 to give you some ideas. There is a lot of potential in this machine for all programming freaks like myself. ■

RANDOM SOUNDS

```
10 REM    PROGRAM 3 - RANDOM SOUNDS
20 PRINT"       RANDOM SOUNDS ":VOL 10
30 F= INT(RND(1)*65535)    :REM FREQUENCY
40 DIR= INT(RND(1)*3)      :REM STEP DIRECTION
50 M= INT(RND(1)*65535)    :REM MINIMUM FREQUENCY
60 S= INT(RND(1)*32767)    :REM STEP VALUE
70 W= INT(RND(1)*4)        :REM WAVEFORM
80 P= INT(RND(1)*4095)     :REM PULSE WITH
90 PRINT"                  VOICE - 1":PRINT
100 PRINT"              FREQUENCY -";F:PRINT
110 PRINT"               DURATION - 50":PRINT
120 PRINT"              DIRECTION -";DIR:PRINT
130 PRINT"MIN. FREQUENCY (SWEEP)-";M:PRINT
140 PRINT"STEP VALUE FOR SWEEP  -";S:PRINT
150 PRINT"WAVE FORM             -";W:PRINT
160 PRINT"PULSE WIDTH           -";P:PRINT
170 SOUND 1,F,50,DIR,M,S,W,P
180 GOSUB 210
190 SOUND 1,0,0,DIR,0,0,W,P
200 GOTO20
210 REM ------------WAIT-----------
220 PRINT"    PRESS SPACE BAR TO PAUSE"
230 I=1
240 GET A$:IF A$=" "THEN 270
250 I=I+1: IF I<200  THEN 240
260 RETURN
270 PRINT"  PRESS SPACE BAR TO CONTINUE"
280 GETKEY A$: IF A$<>" " THEN 240
290 RETURN
```

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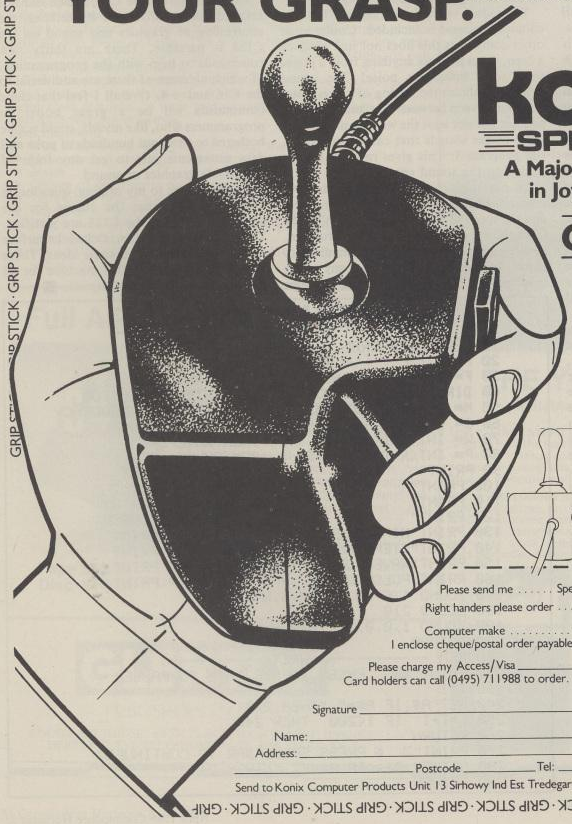

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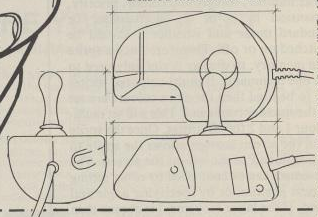

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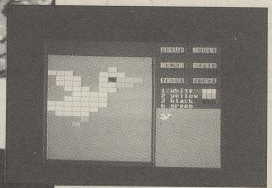
Game and watch

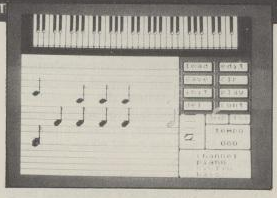
***Frances Rossi** can't write a game program to save her life . . . but with the Game Maker package from Activision anyone can master the 64!*

BEATEN HOLLOW by the computer again . . . or (worse) you've beaten the computer hollow again. Either way you could do with a change. Something creative . . . leisurely. This is when you start messing about with graphics and trying to write a game. Snag: writing games is anything but leisurely. And it calls for a fair bit of programming skill. And patience, and lots of time, and more patience. And the computer can still outmanoeuvre you in the end (it's called a bug).

Given this situation, Activision's forthcoming *Gamemaker* Computer Game Design Kit is going to look attractive. For a start, it puts a reasonable amount of programming power into the hands of even a complete non-programmer, and, in addition, it lets you save your work and run it outside of the Gamemaker program — from that point of view, your output is limitless.

Gamemaker operates through the increasingly popular windows and icons system. The different aspects of games creation are dealt with by separate programs: *SpriteMaker, SceneMaker, SoundMaker, MusicMaker,* and *The Editor. The Editor* is the controlling screen, which, like and editor, appears from time to time, issues orders, calls in the work and disappears again. Here is the master menu and the list of commands. The creative work is done in the other departments.





Pitfall

As well as the Maker programs, *GameMaker* is generously supplied with predesigned sprites, scenarios, sounds and toons, which can be used for practice, as stock items, samples or a basis for a new design. There are also a number of demonstration set-pieces to show you what can be done; these include conversions of *Pitfall* and *Megamania*, which compare well with originals.

SpriteMaker gives you two windows: a larger drawing area, and a smaller window in which sprites or bits of sprites can be positioned relative to one another or even attached together. The colour menu for home-made sprites is restricted to red, white, black and blue, although background scenes use the full colour capability of the C-64 (I'm told). The picture area closes up to a group of cells so that you can see what you are doing in detail, and you can animate your own or stock sprites section by section, to get some pretty good movement. Once you have your new or modified sprite, it can be stored in the sprite menu while you work on the next bit — another sprite, a background, or whatever.

Moving on to *SceneMaker*, you get a full colour menu, and a close up window superimposed on the whole-scene screen. In time, I suspect that most users will find themselves poring over this screen creating Christmas cards and other minor works of art, as it is an attractive drawing package in its own right. The results can be printed out.

The *SoundMaker* screen is going to frighten anyone who doesn't know what a sawtooth is. The screen graphic is modelled on a small mixing desk, complete with 'sliders'. At first it looks complicated; consulting the manual reveals a few hints, and the rest is a matter of experiment. As the sound is continuously adjustable within its limits, you can vary the sound effects as much as you like. The sounds on the sample programs were convincing but a bit quiet, not as vicious as I would have liked. Nothing communicates the squelch of defeat better than a really gross explosion.

The musical effects I heard on the demonstration programs were excellent (as well as being plenty loud enough). The *MusicMaker* screen shows a piano-style keyboard (for programming the notes) and three staves, one for each channel. Trumpet, bass and snare drum are on the menu; I am assured that there are other options. You select a tempo and one of the three channels, and just tap the notes in. All together now: *Mary had a little lamb. . .* Again, the tunes can be saved independently, and there is a stock of ready-made jingles.

When you have all the elements of your creation polished to your satisfaction, *The Editor* is used to collate them prior to saving. I reckon that anyone exploring the program will want to spend as much time with graphics and sound effects as with any attempt at games writing. There is plenty of scope for games within the well-defined games conventions which GamesMaker is apeing, though, and the sprites and graphics can move at a stiff lick when required to.

Inevitably, a trial run on one of the demo games revealed an anomaly. The hero of *Pitfall* suddenly abandoned his pit and footpath and took off up the nearest tree. Then he vanished into the margin and refused to emerge, eventually creeping back via the bottom of the screen. The folk at Activision assure me that this is a bug in the *Pitfall* conversion and not in the *GameMaker* program. I dunno, but it looked like perfectly good sense to me, with all those crocs about.

Manual

This is a good-fun package and I look forward to spending more time alone with it some time soon. The user's manual, by the way, is more a small book than a fat pamphlet, and takes the early stages step by careful step, so that you can find your way round the screens quickly. Control is via joystick or, for the shaky, the keyboard. The disk version should be out in early April, at £19.99, and the cassette version thereafter, at £14.99. ■

States of the art

Commodore Horizons' US and Canadian correspondent ***Neil Phillips*** *reports*

PROGRAMS of North American origin are becoming conspicuous on the European markets. Names like **Epyx, Electronic Arts, Broderbund** and many more are becoming household words (among micro users, anyway). But American games have something else in common beside their ancestry: they're expensive. Sometimes, very expensive.

To understand why, one must look at the markets. In the US, the business computer became established first. Everything costs more when it's made to business standards, including games software. In the UK, the home micro took off first, with a supply of cheap and cheerful games, an industry geared to consumers. The US home computer market has inherited the standards and production costs of the business software. A price tag of $40 a game is not uncommon.

What happens when an American game is exported? There are no cassette progs for the C64 in the US, so first it must be transferred to cassette production; then a distribution deal has to be set up; everyone wants a bit of the pie, on top of an already steep price. Only large concerns like Centresoft/US Gold can deal in large enough quantities to keep the price reasonable.

Everyone suffers. You have to pay outrageous prices (or won't), and they don't get much turnover. And the long export process means that many are outdated by the time they get to you.

Possibly the launch of **Mastertronic's** budget range over here (at $9.95 a throw) may set a lower price trend. But until then, just remember, when you buy an import, they may not always be trying to rip you off. It just seems that way . . .

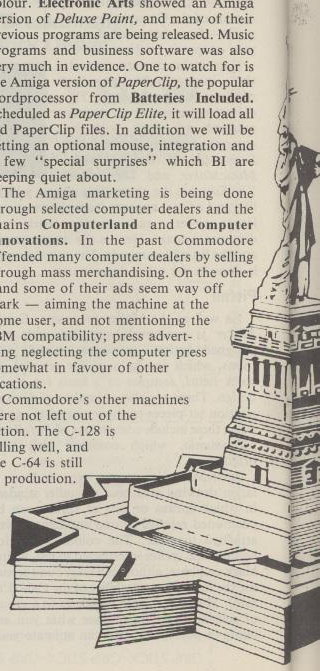
The **World of Commodore III** (5th-8th December) was the third appearance of what is the largest Commodore-only show in the world. Commodore (as you all know) started in Canada way back when. This year's show heralded a change in direction.

The new Amiga was the star. It has been touted as the leader in the new era, and I would agree. Most of the rumours are true: fantastic graphics and sound, full multi-tasking, expandable to 8MB, even IBM PC compatibility via an inexpensive emulator.

Hardware products are already being shown for the Amiga. **Tecmar** features a 1MB RAM expansion module, 20MB hard disk drive and tape backup, and a 300/1200/2400 baud fully Hayes-compatible modem. Soon to be released are video digitising systems which can incorporate colour. **Electronic Arts** showed an Amiga version of *Deluxe Paint,* and many of their previous programs are being released. Music programs and business software was also very much in evidence. One to watch for is the Amiga version of *PaperClip,* the popular wordprocessor from **Batteries Included.** Scheduled as *PaperClip Elite,* it will load all old PaperClip files. In addition we will be getting an optional mouse, integration and a few "special surprises" which BI are keeping quiet about.

The Amiga marketing is being done through selected computer dealers and the chains **Computerland** and **Computer Innovations.** In the past Commodore offended many computer dealers by selling through mass merchandising. On the other hand some of their ads seem way off mark — aiming the machine at the home user, and not mentioning the IBM compatibility; press advertising neglecting the computer press somewhat in favour of other locations.

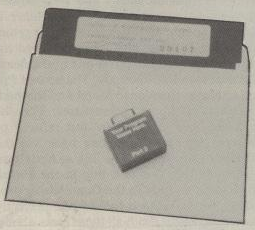
Commodore's other machines were not left out of the action. The C-128 is selling well, and the C-64 is still in production.



Security

Software companies have always claimed that piracy robs them of millions annually. The pirates blame inflated software prices (they should complain). Meanwhile, copy protection has become an industry in its own right.

Yet ninety-five percent of the software available today can be copied by an eight-year-old BASIC programmer.

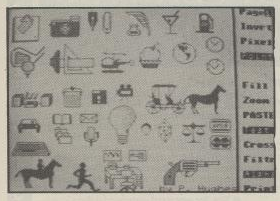


Two new and entirely different methods of copy protection are vying for attention in the US. The **Datalock Manufacturing Company** *(PO Box 198, Stevensville, MI 49127, USA)* has invented a 'dongle'. This is a tiny plastic box which plugs into port two on the C-64. If the dongle key isn't present, the program won't work. Not a new idea, but Datalock's dongle is superior for a couple of reasoins important: it is (they claim) hard to break into, but relatively cheap. Instead of protecting the disk, the manufacturer would have a key routine built into his program. Prices rane from £3 downwards, dependingg on quantity, with a minimum order of 100.

Glenco Engineering Inc. *(3920 Ridge Avenuee, Arlington Heights, IL 60004, USA)* are going about it differently. They produce Safeguard 64 Disks which, they claim, cannot be copied at all. Two protection schemes are incorported onto each disk: an uncopiable magnetic mark, and program encryption. A password is needed to load and run the program. Though the disk can be copied, the magic mark cannot. When the programs searches for it (and fails to find it) it will detect the illegal copy. Prices are going from $5.50 per disk to $2.60 or less for larger quantities.

Which system is better? Both are certainly advanced, but I would tend to favour Datalock's. It is easier to use, both for the software publisher and end user, and the cost is modest. If the user copies the disk, it will work alright — but not without the key. This lets you make your own backup copy, while preventing distribution. Breaking open the dongle key doesn't help, either, and it is sturdily made.

On the other hand, encryption and magnetic marketing may be too much for smaller companies. It goes without saying that no system is one hundred per cent foolproof (or "smartproof" in this case), but it is possible to weed out the casual copier, a significant part of the problem. Then perhaps prices can start creeping down . . .



Programs taking advantage of the C-128's extra features, as opposed to the C-64 mode, were showing up more, especially business software. C-64 softare and accessories are still being released by the handful — a networking system ideal for school use, a proper music keyboard to hook up to your C-64 with software, word processing which shows on the screen exactly what is to print, including bold, italics and underlinings; a disk of party songs with graphics! *Flexidraw 5.0* is the best graphics program for the C-64 I have seen to date, and is compatible with *ComputerEyes,* a video acquisition system. And many more.

Despite the continued success of the Commodore market, there are still problems.

Supercat

Integrated-Software Systems is an established software house well known for disk cataloguing programs in the Commodore market. Their latest, *Super-Masterdisk,* combines the features of their earlier releases.

The program consists of three main parts: *Cataloger, Supercat* and *Disk Changer. Cataloger* lets you compile information on up to 99 disks (plus itself). For the next 1-99 disks, you need a new Masterdisk, and so on. On a single drive, setup is simple but slow if you have many disks, as disks must be swapped round to collect the data. With a dual drive, this is quicker.

Once catalogued, you can delete files, add or delete disks, search for a file, print labels, print disk ID usage charts, list files, check memory space and even find the load address for an M/L program. Most options work without a printer, although a printer will make the most of the package.

Supercat creates a super-catalogue. It reads up to five Masterdisks and combines the data on a separate disk. You can average 3000 to 4000 files on one Supercat disk. This is more than a Superbase data disk will hold, and much easier to set up — with Superbase you must create fields and the like. The operation options are much like Cataloger.

Disk Changer lets you examine disks, change IDs to avoid duplicates, retrieve SCRATCHed programs and change disk bytes. You could even create your own copy-protection schemes, or save data on disks which would normally be lost.

At present *Super-Masterdisk* is available mail order only in the UK, at $39.95 plus $5.00 shipping and handling, by dollar money order. We got our package quickly and in perfect condition. Order from *Integrated-Software Systems, PO Box 1801, Ames, IA 50010, USA.* They are also looking for a UK distributor.

Jubilee

Now here's a thing ... 'free software' normally means 'public domain', or type-it-in-yourself, or buying a hardware package, or piracy ... in my wanderings I have come across an individual who will not only give you free software, but possibly extra cash as well. His name is Monty Lee Stark, and, as you probably guessed from the name, he resides in the USA.

In his own words, Monty is a 'prodigy who never grew up'. He started designing his *'Jubilee'* program from the C-64 in March of 1984. In May 1985 he quit his job as programmer/analyst. To market Jubilee? Not exactly. In his own words "I have no marketing — Jubilee is just a labour of love that I'm giving away to anyne who happens to be peculiar enough to need it."

So what exactly is *Jubilee?* "*Jubilee* is the performer of 7.92209092360434E + 28 works of music and the chronicler of your ideas, dreams and remembrances." Perhaps it would be easier to say that it is cross between a memo and a music program, with a few extras included. You "create" your message on the screen, in any colour, including reverse characters and graphics. Music is randomly generated. Screens can be saved, recalled and printed out. The bottom line of the screen features the time and date, and you can perform various date-finding functions. *Jubilee* is available on disk only.

Monty will send a personalised copy of the latest version to anyone who writes. He will pay for the disk and postage (unless you send him one). He is, however, open to all contributions, as well as suggestions and comments.

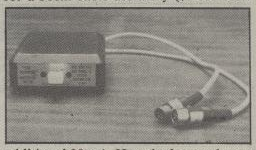
With encouragement, maybe we'll see some more interesting software from Monty in the future. You can reach Monty at *PO Box 1813, Surprise, AZ 85374, USA.* As he said, "I'm no corporation. I'm nothing but me."

The Reunion

Attention VIC-20 owners. Many former VIC owners upgraded to C-64, keeping their old peripherals. Easy. Unless you want to use the VIC as well. Difficult. Because the peripherals can only be hooked up to one computer at a time, necessitating much time-wasting swapping of leads and down-time.

Hy'Tech Industries have come up with a simple solution. Called **The Reunion,** its a black box 11 × 10 × 4.5cm. On the back is a serial port with two 43cm serial cords. On the front is a selection button. You simply plug the interface into your two computers (any combination of VIC-20s and/or C-64s) and your peripheral into the interface. Simple.

There are a few catches. The interface does not cope with video connections. The best method is simply to change the RF modulator connected to the TV whenever you want to switch computers. The Reunion is warranted for one year, and the price over here is $29.95 and $4 for a 30cm cable assembly ($2 for each



additional 30cm). Hytech also produce a Model "P" interface which connects two printers to a disk drive or computer ($39.95) and a plug-in reset switch ($12.95). For more information you can contact HyTech at *PO Box 466, Bay Pines, Florida 33504, USA.*

Strategy

A good new historial strategy game has reached me from **Strategic Studies Group.** *Carriers at War* is based (to start with) on the US fleet carrier operation in the Pacific, 1941-45. The game is complex, with a multiplicity of decision levels. Fortunately, a tutorial is included — the scenario is Pearl Harbour. You play either side, and each game will present different variations resulting from your decisions. When you finally get bored, you can create your own scenarios, or alter those on the master disk — design weather, ships, planes, location as you fancy. A separate design manual is included, and another tutorial.

SSG's products are distributed in Europe by **Electronic Arts,** or direct from *1747 Orleans CT., Walnut Creek, CA 94598, USA* or *336 Pitt St., Sydney 2000, Australia.* They have also updated their complex game of galaxy-colonisation (it's as much as intellectual exercise as a game) *Reach for the Stars.* ■

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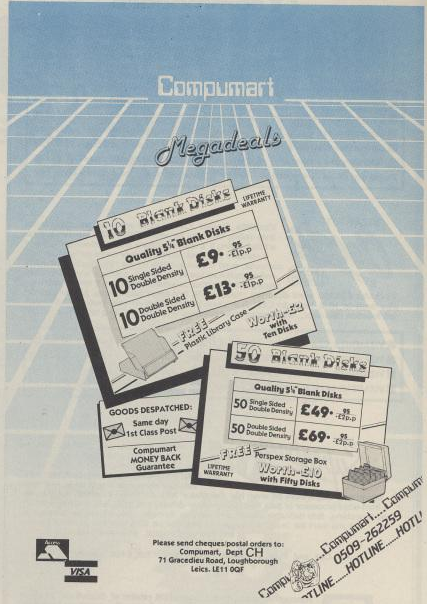

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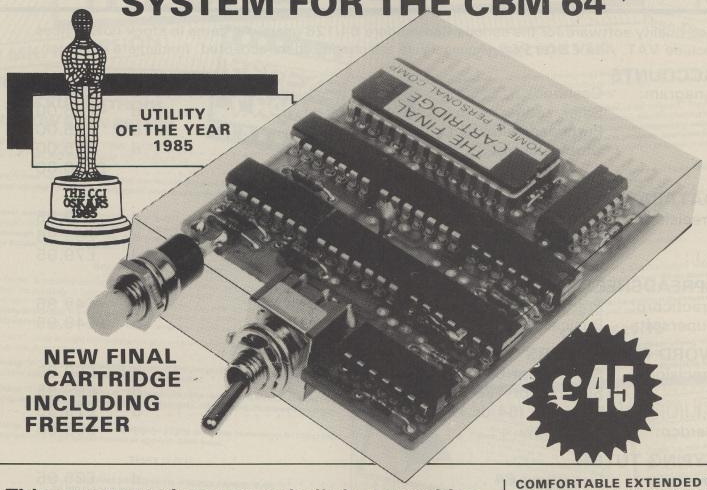

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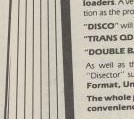

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AmigaDOS

There is a genealogical link between Unix and AmigaDOS, which means that Tripos — which is implemented as Amiga's DOS — is properly the cousin of Unix. AmigaDOS is the less intellectual cousin, but bright and useful nonetheless.

The two operating systems are not compatible, but just generally similar. There are also some major differences. Put simply, there is greater sophistication in Unix than there could be in AmigaDOS. Unix does more for the user because there is more code to it, powerful facilities to assist operation, and the use of structured — almost architectural — principles.

AmigaDOS scores here over Unix; it is a simpler more compact software system, and with all the features of competitive Unix-based machines except for one. Unix is multi-user and available across a range of different machines, but AmigaDOS is for use on one machine at a time (the Amiga). AmigaDOS was produced from a version of the Tripos operating environment which had matured over several years, become further simplified and has developed to function as a commercial system.

"The file system is fixable and no redundant information is built into the file structure," explains its author, Tim King from Bristol-based Metacomco. Thus Tripos is modular and easy to expand, very easy to use and yet surprisingly compact.

King describes Tripos as the operating system which fits between the single-user, single-task IBM PC, and the multi-task, multi-user Unix-based machines. He has changed Tripos from that version which is still used at Cambridge (this originally being academically-produced, public domain software).

Commodore and Amiga had been planning to run an operating system very much more like Unix. What might it have looked like? "I never saw a version of it," said King. "But as far as I know it was an object-oriented filing system. I think it was ... a little too ambitious. I believe it would not have had a Command Line Interpreter (CLI). The intention at that point was a Macintosh and icons type of approach."

AmigaDOS has both the icons and, in a major innovation, the ability to inter-work with more than one CLI.

The terms of the deal between Commadore and Metacomco have recently been changed. Consequently Microsoft is to bundle MBasic with the Amiga, for Commodore, but the supplier will still market the ABasic commissioned from Metacomco by Amiga as an option. Metacomco is also developing a Basic compiler for Amiga — the so-called ABasicC. Whatever the case, AmigaDOS will ensure compatibility of BASIC programs written on either system: that's a legacy of Unix-type, code-level compatibility.

Tripos is a mature operating system which refined the approach to the principle of message passing; multi-tasking is thus the operation of passing information from one process to another — inside rather than outside the computer.

This message passing operates by allowing the programmer to assign priorities to each process: a high priority task goes first and fastest: a low priority task does not hog the processor, device drivers or the available memory.

AmigaDOS includes Tripos, and a complex *super-structure* of system software. Moreover, AmigaDOS disks are divided not into sectors, but rather complete tracks; there is no "directory track"; all storage 'blocks' are message packets, and there are no arbitrary limits on memory capacity.

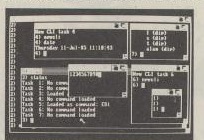
The DOS is an asynchronous filing system, ideal for multi-tasking. It introduces the concept of parallel operation — in which several tasks appear to proceed simultaneously. For every task a buffer is kept for the disk, and the DOS writes to the buffer, not the disk. The buffer is in two parts: a track cache, and below that individual block caches. Writing to the disk is a low priority task, and there is in any case a 3 second delay between the buffer write and the disk update.

This makes the system vulnerable to power failure. The DOS will report that a file has been closed as much as five seconds before it has written to disc. There are safety features built-in, and the file structure can cope with potential data loss in a quite unique manner. Given one good block, or file of data, un-closed files can still be opened and re-constructed.

Conventional systems would lose the data if power was lost, or if the write instruction corrupted. On AmigaDOS the data *is* the directory. AmigaDOS consequently places no limits on the size of directories, or sub-directories: data can even stretch across several physically distinct discs. And all files are the same. This an un-typed operating system — all files will work happily together.

AmigaDOS is loaded not as ROM code, as an installed chip inside the Amiga, but as system files fed into the 256K so-called RAM-ROM chip from the system diskette at power up.

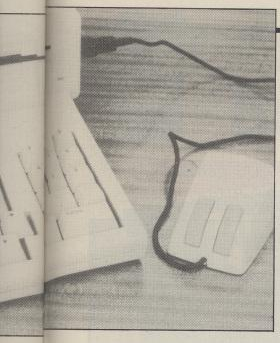
Tim King explains that the AmigaDOS operating system is now so complex that this method was preferable so that the system software can more easily be modified, with the supply of new system software on diskette, when upgrades are developed or as bugs are ironed out.



"None of us thought ourselves so wonderful that we could produce 256K of ROM code without any bugs in it," said King. This is 256K of extra RAM totally independent of the machine RAM. Other machines use the same techinique to load the initial system files — Atari's 520 ST, for instance.

"The difference ... is that in the Atari it goes into the RAM they tell you you bought — the 512 doesn't have 512K memory because at least 256K is taken up with the ROM code, in your RAM," explains King. Amiga instead put in the extra RAM.

The Amiga is provided with a great deal of system software There is 256K of ROM kernal code. Tim King says there is 750K system code for the machine in all, including the Workbench diskette, CLI programs, DOS commands, a RAM disc (for enlarged but temporary internal storage) and a disc



Developed from TRIPOS and related to UNIX, the Amiga's disk operating system offers unique facilities. ***Paul Walton*** *explains*

doctor (to recover from corrupt discs): and on the developments discs, the Assembler, the Linker, two BASICs, and the PASCAL compiler.

Certain features of AmigaDOS bear closer examination — with the assistance of its author, Tim King:

MULTI-TASKING: "It was always designed as a multi-tasking operating system," said King. There are a large number of different tasks (pre-programmed) within the machine. For each physical disc unit you have there is a task which controls the disc. If you have two disc units, you have two tasks — they all share the same code.

Each window has a task associated with it, which handles things like buffers up lines and rub-outs and so on." Each window defines a new task .

APPLICATIONS HANDLING: "The way the system works is that an application program very rarely talks to any of the devices directly," said King. "Instead it talks through a device handler task. In the case of a serial line (one task) this a fairly trivial bit of code. It just transfers requests to the device driver. In terms of the screen it's a little bit cleverer, in that it does things for you like rubbing out, line buffering etc." This enhances the graphics potential of the Amiga.

FILE STRUCTURE: The file system structure is not a separate directory, as in MS-DOS. Instead it is a method of arranging information in a file which is stored alongside the data. "It gives you the chance to do asynchronous I/O, which is important if you want to do something like games programs. It means you can keep characters displayed on the screen, whilst loading a new frame. It gives you *device independence*, because it does not matter if the processor must await a device before moving on to a new task," said King.

UN-LIMITED FILE SIZE: AmigaDOSis an operating system which can track the contents of files, or volumes, wherever or whatever size they are. (This was a major improvement over standard Tripos). "With one physical disc drive, it is very good to be able to cope with files on floppy's that aren't in the disc drive. One of the fairly major modifications we had to make to the system was in order that it could track files on different volumes, even if they weren't physically in the drive ... the system automatically puts up boxes which say put which disc to put in. "We could do that because we had complete control and access over all the sources." This was not possible under Unix, according to King, and is one reason Amiga did not want to use Unix.

MULTIPLE CLIs: "If you are editing a file, and you've forgotten what another file name is called you simply switch out to another CLI, list the directory and find out. You want to print a file — ok, set the printer going, edit another file. When you've finished editing a file, you want to set the program compiling as well ... You can compile, edit and print all at the same time. It makes programming easier," said King.

CONSISTENT USER INTERFACE: Within AmigaDOS there are a standard set of four calls: Open, Read, Write and Close. "You can open anything: a file, a serial line, the built-in RAM disk. You can then read and write bytes to it, and then you close it." This does away with complex programming techniques, King explained, which call for a special routine, or trap, to be written in order to move from one activity to the next. Multiple tasks appear to be completed simultaneously.

MULTI-TASKING: This also means that AmigaDOS attempts to do as much as it can in parallel (processor and memory allowing). "The filing system is very carefully designed so that if there are two tasks, both wishing to do I/O, for example, one of them will perhaps do a read request to the file system, and that will cause a request for a disc block to be brought into memory. "Disc blocks are held in a cache in memory. So essentially the file system waits for that disc block to be transferred. If, however, in the meantime another task asks for I/O, then the file system is designed in such a way as to handle that request even though it's waiting for the disk block to come back from disc."

PARALLELISM: Imagine that the data for task B is in a cache and the data for task A is not, and it needs to do a transfer. Task A will ask for it. The transfer will be initiated. Task B will get the data out of its cache and will return the result even though task A is still waiting for data to come back from the disc. This technique is dubbed *parallelism*. It can give weird effects in operation.

SECURITY: "If you rename a file the file system does the checks to make sure it is valid, and if it is valid it comes back and says 'ok'. Then it goes away and does it," said King. Confused? "There is a 3 second time out before flushing the caches back to disc, so that you must not take the disc out while the light is on." What if you take the disc out too soon? "It notices the disc isn't there and puts a request up saying 'please put disc back." OK...

DISK RECONSTRUCTION: If you do mess up the structure of the disc it is re-creatable. "There is no such thing as a directory in physical terms on the disc. It is held within the file structure. So there isn't a file which holds all the names of all the other files. Instead it is the structure on the disc which actually implements it. "We have a program out called Disc Doctor, which will take a disk and will re-create it. Obviously it can't re-create data that has been physically lost," concluded King.

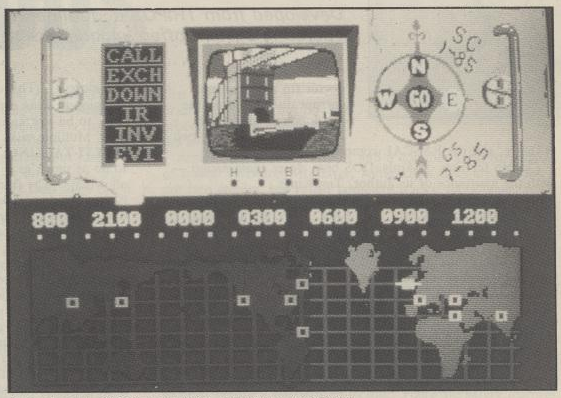
AmigaDOS is significantly more sophisticated than the traditional personal computer operating systems. Will people use all of the features? King thinks they will. "I meet two types of people. The people who are used to MS-DOS type computing find Tripos perfectly easy to use because, at its simplest level, it just provides a command line, and you do one thing at a time.

"It can look just like MS-DOS or CP/M in this respect. People who tend to get more confused with it are those who come down from the Unix world, when they expect to have a whole range of utilities and they are asking a bit much ... People really do like it. They begin to find that they can benefit from multiple CLI's, and multi-tasking. "When they use it they like it — it's very fast."

Games

Andy Pennell looks at some early US games released by Electronic Arts

Hacker



Electronic Arts, 2755 Campus Drive, San Mateo, Calif. 94403

FROM THE ads, I had the impression that **Hacker** was like **System 2000,** where you have to get around a computer system that you shouldn't be in, but I was completely wrong. When the disc boots, the bland message 'Logon please:' appears, and this I had expected. Logging was pretty easy, but after doing so the game changes entirely, so you are not using a Teletype terminal, but a complete colour graphics workstation (ie your Amiga).

The main screen display consists of two halves — the top shows a TV screen, some control buttons, and a compass-type device, while the bottom shows a neat map of the world, and the time of day all over it. The plot is that you are in a small vehicle (known as a SRU) that can travel all over the world using underground tunnels. You have to go to the various cities shown on the map, and negotiate with the spies you find there to build up an important document, which is spread around the globe in pieces.

The graphics are basically excellent, with loads of detail on the control panel. The sound is also wonderful, the main noise being a continuous deep humming noise, but changing suitably when you shoot along the tunnels, and the scrolling TV display is very neat indeed. Most of the time you use the mouse for everything, including direction control

and bartering with the spies. When you move your vehicle to a city, you click the Up button, a suitable noise can be heard, and the TV shows a famous sight from that particular location, which includes such things as the Acropolis (Greece), Tower Bridge (London) and the Taj Mahal (India). These displays are delightful, and you can pan left and right to get a good look at them. Pressing the CALL button makes the Amiga emit a wolf whistle, which attracts the attention of the local spy, with whom you can barter for information.

The game mainly consists of writing down which spies like which objects, and then working out how you can get all the bits of the document together. Although you don't really do much in the way of action events, its fun to play simply because of the neat graphics and sound. Once you've visited all the cities though, interest probably drops.

One-on-One

THIS IS A basketball simulation, based on two real life players, Larry Bird and Julius Erving. I know very little about basketball, but on the easiest level I can almost win. The game looks like it would on a C64, so on graphics alone it's not very good. The thing that makes the game stand out is the incredible sound — it is hard to describe how good it is. I have heard digitised sound on the Mac, and was impressed, but compared to One on One it was nothing — the sounds from a real game have been recorded, then stored, so that the crowd roars, timeout buzzers sound, the ball bounces, and the ref shouts the offences at you (in American of course). You can choose which player to be, and the choice effects the style of play, as each have their own specialities. It takes a while to get used to the mouse control, but you can use a joystick if you wish. Very occasionally you can throw the ball so hard that it breaks the perspex board behind the basket, and a little man comes out with a broom to sweep it up, cursing realistically under his breath.

My only moans about the game apply to all EA Amiga games — firstly it requires Kickstart 1.1, which is tricky to get hold of at the current time in the UK, and secondly the copy protection used makes terrible noises as it crunches on the disc. US bulletin

boards are full of people complaining that their original disc no longer loads.

You don't need to know much about basketball to play, and it's great fun with the volume turned up. Shame about the copy protection though.

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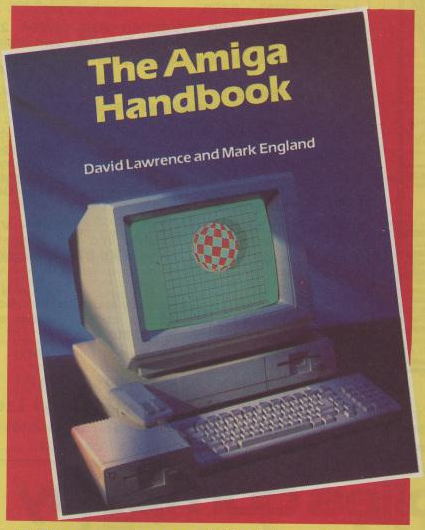

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DIRlist

This 64 utility comes from Jean-Yves Sireau of L'Etang la Ville, France

WHEN THE 64 loads a directory from disk, this normally overwrites any Basic program in memory.

This simple program allows you to avoid this by defining a new system call to read the directory. An assembly listing is included for machine-code experts, but the Basic program is all you need, and it includes a checksum routine to help avoid errors.

```
10 REM ***************************************
20 REM *** DIRECTORY BY JEAN-YVES SIREAU ***
30 REM ***************************************
40 FORX=49152TO49261
50 READY:CK=CK+Y
60 NEXT
70 IFCK<>16211THENPRINT"ERROR IN DATAS!!! "CK" SHOULD BE 26111":END
80 PRINTCHR$(147)"DIRECTORY - USE SYS49152 TO LIST DISK"
90 PRINT"DIRECTORY (OR CATALOG)."
100 END
49152 DATA169,0,133,144,169,36,133,251
49160 DATA169,251,133,187,169,0,133,188
49168 DATA169,1,133,183,169,8,133,186
49176 DATA169,96,133,185,32,213,243,165
49184 DATA186,32,180,255,165,185,32,150
49192 DATA255,164,144,208,61,160,6,132
49200 DATA251,32,165,255,166,252,133,252
49208 DATA164,144,208,46,164,251,136,208
49216 DATA238,164,252,32,205,189,169,32
49224 DATA32,210,255,32,165,255,166,144
49232 DATA208,24,170,240,6,32,210,255
49240 DATA76,75,192,169,13,32,210,255
49248 DATA165,197,201,63,240,4,160,4
49256 DATA208,197,32,66,246,96
```

ASSEMBLY LISTING

```
.; C000 A9 00    LDA #$00
.; C002 85 90    STA $90
.; C004 A9 24    LDA #$24
.; C006 85 FB    STA $FB
.; C008 A9 FB    LDA #$FB
.; C00A 85 BB    STA $BB
.; C00C A9 00    LDA #$00
.; C00E 85 BC    STA $BC
.; C010 A9 01    LDA #$01
.; C012 85 B7    STA $B7
.; C014 A9 08    LDA #$08
.; C016 85 BA    STA $BA
.; C018 A9 60    LDA #$60
.; C01A 85 B9    STA $B9
.; C01C 20 D5 F3 JSR $F3D5
.; C01F A5 BA    LDA $BA
.; C021 20 B4 FF JSR $FFB4
.; C024 A5 B9    LDA $B9
.; C026 20 96 FF JSR $FF96
.; C029 A4 90    LDY $90
.; C02B D0 3D    BNE $C06A
.; C02D A0 06    LDY #$06
.; C02F 84 FB    STY $FB
.; C031 20 A5 FF JSR $FFA5
.; C034 A6 FC    LDX $FC
.; C036 85 FC    STA $FC
.; C038 A4 90    LDY $90
.; C03A D0 2E    BNE $C06A
.; C03C A4 FB    LDY $FB
.; C03E 88       DEY
.; C03F D0 EE    BNE $C02F
.; C041 A4 FC    LDY $FC
.; C043 20 CD BD JSR $BDCD
.; C046 A9 20    LDA #$20
.; C048 20 D2 FF JSR $FFD2
.; C04B 20 A5 FF JSR $FFA5
.; C04E A6 90    LDX $90
.; C050 D0 18    BNE $C06A
.; C052 AA       TAX
.; C053 F0 06    BEQ $C05B
.; C055 20 D2 FF JSR $FFD2
.; C058 4C 4B C0 JMP $C04B
.; C05B A9 0D    LDA #$0D
.; C05D 20 D2 FF JSR $FFD2
.; C060 A5 C5    LDA $C5
.; C062 C9 3F    CMP #$3F
.; C064 F0 04    BEQ $C06A
.; C066 A0 04    LDY #$04
.; C068 D0 C5    BNE $C02F
.; C06A 20 42 F6 JSR $F642
.; C06D 60       RTS
```

Hitmen, funny animals and frontal lobes

***Ken Matthews** finds that not all adventures have to involve pixies*

A DECIDEDLY cartoony flavour to this month's column with two new titles from **US Gold** . . .

First, under the All American Adventures flag, is the disk-based **Masquerade.** In this Sam Spade type detective game you begin by having tracked the notorious hit man Ivan Tupickemoff to a seedy hotel and rendered him unconscious with your gun butt (seems you ran out of bullets — or slugs if you prefer). This has given you the first break in your efforts to track down this mean gang and bring it to justice.

You will find this far from easy as you wander about the hotel and its surroundings picking up various cryptic clues and meeting the local low life. But initially your main problem will be cash (maybe you just couldn't afford those bullets!) — even notorious hit men seem to be pretty poor nowadays.

Dogfood

The problems are just beginning as you discover bombs, electric fences and deadly snakes waiting to thwart your efforts and, unless you are careful, sinister figures will dog your tracks waiting to remove you from the game.

The cartoon style graphics are very good and quite fast, though you can turn them off if you like. The parser uses the old verb/noun format but seems quite adequate to the task. The instructions with the game are brief but do give some clues as to what to look for. One unusual feature is the inclusion of a 'beep' that precedes important messages. For the hopelessly stuck, including me at the moment, US Gold are offering hints in exchange for an ssae. Nice to see they're taking it seriously.

Masquerade looks like fair value for money and should provide plenty of puzzles for any budding private dicks!

Also to be released is a junior adventure/educational program from Walt Disney, **Mickey's Space Adventure,** on the KIDS' label.

The idea is that by playing the adventure, which takes Mickey and Pluto (the dog not the planet) on a trip round all the planets from Mercury to Pluto (the planet not the dog), kids will learn about our solar system while having a lot of fun.

As you might expect of something with Disney's name on it the package is professionally presented and executed.

The twelve page poster style instruction booklet gives the player or the parent all the information they need to get the most from the game including seven 'activities' for the youngsters to try in between play sessions. There's even a glossary to help with those awkward questions the very young are so good at asking!

The game itself begins with Mickey and Pluto frolicking in the countryside as is their wont, when, all of a sudden, a spaceship lands nearby. It is from the planet Oron near Alpha Centauri. A criminal has smashed a memory crystal containing the history of Oron and scattered it across our Solar System. The Orons sent out the computer controlled craft to find a human to travel to the nine planets and recover the pieces. This is where you come in — aiding Mickey and his pedigree chum to get those pieces back!

You won't need to type in commands, just select a verb and noun from those offered at each turn. The game features very good graphics and cute sound effects to keep the kids amused and I'd recommend it to any parent keen to get youngsters, from about six years old and upwards, interested in those games mum/dad spend all their time on!

It's always good to see enthusiasts having a go themselves, and that's just what three young men from south-east London have done by forming Kalisti Enterprises, dedicated to producing original text adventures for the 64. Their first game, **Coma** is certainly that. . .

On the way back from getting some fags you are hit by a car and find yourself inside your own brain! You must find your way through that most complex of organs in order to recover and continue your life.

Starting out with only a synapse and a grain of salt you must travel forward and up towards the frontal lobes, and I must say that synapses, neurons and phagocytes make a pleasant change from orcs, trolls and dragons!

The plot is very original and has some bizarre twists — particularly in the midbrain where rabbits fly and knives become bananas!

The cassette version I was sent boasted 39k of code and loaded in a little over two minutes. Kalisti are developing an editor to allow for larger games but will be using the Quill for their first few titles including this one, so I needn't say more about parsers etc.

Plague

The only moans are a couple of spelling mistakes (molecule and pituitary) and a little bug which doesn't seem to affect play. Still, I've seen much worse from established software houses so don't be put off. Kalisti's next release will be about the Black Death in 1342 — what a cheerful bunch they are!

You can get these games from Kalisti at 31 Blakewood Court, Anerley Park, London SE20 8NS at £5.95 on cassette and £9.95 on disk (inc. P&P). At that price I think they're worth trying — well done lads!

Before I sign off I've got a quick thank you to adventurer extraordinaire Jim Piper and his wife Christine for letting me stay with them in Farleigh Wallop while we had the builders in — otherwise I wouldn't have been able to think straight and you wouldn't be reading this column! See you next time. ■

Into the gap

Book: *The New Hacker's Handbook*
Author: *Hugo Cornwall*
Publisher: *Century*
Cost: *£6.95*

THE ORIGINAL *Hacker's Handbook* caused excitement outside the computer world when it popped up. Hacking had already acquired a buccaneer image, eagerly touched up by press and public with the promise of billion-dollar felonies, international security leaks and Armageddon (no less). *The Hacker's Handbook* sounded like the Bible and Pandora's Box for the post-1984 generation.

Whatever, the *New Hacker's Handbook* contains not less information on the subject, but more — about 25 pages more. This is a complete revision. With the exception of a reference to a sub jucide case, what was there before is still there, and has been expanded and updated.

The topics covered include advice on the best (and the least) equipment — basically a micro with a modem — , the hacker's 'targets', where to find more information on the target systems, and how to go about prodding a target until the desired passwords or bypasses are obtained.

The author spares no trouble to stress that hacking is a game of wits, whose aim is to outsmart the ostensibly outsmartable and leave behind no trace other than (perhaps) a modest message for the caretakers. He draws a comparison with rambling over privately owned land with due respect for the Country Code (no prosecution can be brought unless damage is demonstrated), but also warns about areas which may become subject to criminal prosecution in the future. And he complains about "would-be enthusiasts asking me to please, please send them some real telephone numbers ... the point of hacking is to find things out for yourself."

Anyway, it's an essential collation of information for the novice hacker. The real work, though, you have to do yourself. And the answers aren't in the back.

Starting the C16

Book: *Using the Commodore 16*
Author: *Peter Gerrard*
Publisher: *Duckworth*
Cost: *£9.95*

THIS IS one of those stout paperback volumes which has a bit of everything in it. The chapter headings go from Getting Started, Basic Programming, More Basic Programming to Writing a Games Program, Getting Adventurous (plotting and writing adventure games) and Introduction to Machine Code. The appendices include the Fundamental Memory Map, ROM Memory Map and Machine Code Instruction Set among others, and the whole covers 334 closely packaged pages.

The author doesn't profess any special devotion to the Commodore 16 and is as cheerfully open about its shortcomings (lack of memory, limited compatibility with the older Commodores) as he is about its virtues (advanced BASIC. They said that abut the QL, didn't they?).

The style and continuity of the book constantly tumble over each other. Take: "So what, exactly, is a monitor? ... it's nothing to do with a television monitor, or a dedicated computer monitor. That is what you use to observe the display generated by the computer ..." (This is on page 77) "No. a monitor is an extremely valuable aid when it comes to programming in machine code." He never does explain exactly what it is. It's use is described in catalogue form, and you are left to infer that it is a list of memory locations and their contents. Program printouts for experimentation are generous without turning the book into another "1001 Programs" volume, and there's at least a tenner's worth of knowledge in there for the finding, if you intend to devote yourself to the C16.

Basically C128

Book: *Commodore 128/ Starting BASIC*
Author: *Sean Gray*
Publisher: *Glentop*
Cost: *£5.95*

THE STATED aim of this book is to start the complete beginner programming in Commodore's C128 BASIC. As well as the vital commands, the author looks at different programming techniques including the revered structured programming. He sets out to be clear and sequential, and the text is generously supplied with flow diagrams, sketches where necessary, and the occasional exercise (answers in the back) to keep the reader moving.

The early part of the book takes the introductory steps very slowly indeed and in a conversational style, invoking response from the user, introducing the concept of strings, numbers and variables smoothly and painlessly, and taking what I consider to be the excellent course of putting the user through a few errors in order to demonstrate the difference between the error and the correct method. This avoids the situation where the quivering novice (OK. Some novices, especially adults confronted with large, expensive-looking machines, do

quiver) presses the wrong key, gets the bleep, and is left with a worse quiver and no help from manual or micro. It also accustoms them to the important idea that mistakes can be made without dreadful consequences.

Official secrets

Book: *The Official Book for the Commodore 128 Personal Computer*
Authors: *Mitchell Waite; Robert Lafore; Jerry Volpe (The Waite Group).*
Publisher: *Howard W. Sams*
Cost: *TBA*

THIS IS intended to be a comprehensive user handbook — programming information is included to illustrate certain specifics, such as the use of sprite graphics, but this is a very minor part of the book, which simply does not deal with programming as a subject. As such it's actually quite a useful introduction to computing in general, although it concentrates singlemindedly on the C128. The writing is the kind of laconic factual journalism at which the Americans excel, rarely rising from the methodical tone of a lecture, even when engaging with arcade games.

One of the outstanding features of the C128 is the inclusion of CP/M, the classic disk operating system. Despite the appearance of WIMPS on the skyline, coming to the aid off hapless folk threatened with A>, more rather than fewer users are getting involved with disk operating systems in small business computers. This volume does not go deep into CP/M, but gives an introduction, and tells where to go for further information. Unfortunately, like the address list, this applies only to the USA.

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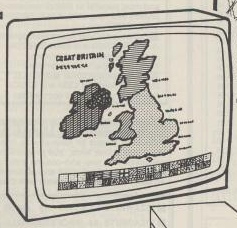

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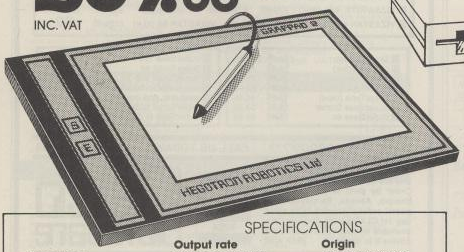

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W Midlands

IF YOU read this month's news page, you will see that the *TAPE 3+1* program is now available from Commodore to enable you to save information to tape. However, if you wish to reprogram the routines yourself, you must copy the ROM into RAM and modify it. Enter the wordprocessor, then hold down RUN/STOP and press RESET. Alter the code at locations $119C, $3AFF and $3CEC from 08 to 01, and the new device number will be stored at $AE. Unfortunately you will have to disassemble the rest of the code to check for other locations which need to be similarly altered.

When you have finished, type G 1000 to reactivate the wordprocessor from the RAM copy, and see if it works! Don't forget the Plus/4 uses the same SAVE/LOAD kernal routines as the 64.

Vic 20 training

I HAVE been using a Vic 20 with a 1540 disk drive to store train-spotting information using a menu-driven routine. However, when I type in about 60 pieces of data of about two lines each, I get OUT OF MEMORY ERROR. Yet the disk directory tells me that I have only used up around 14 blocks of information, with 650 blocks free. Is there something I've missed?

G L MacLeod
Edinburgh

IT IS the Vic, not the disk, which is out of memory! The answer is to save the data in smaller chunks, though this means you will not be able to "sort" all the information at once. An alternative would be to use Random Access Files, which would allow the program to save each piece of data as it is entered. In this way you can use a lot more of your disk space, though you will find that an index method would provide faster access than a menu method.

No files on Plus/4

IS IT possible to modify the program DCOPY (John Cochrane, *CH* Jan 86) to run on the Plus/4? It will not work with the built-in File Manager program, coming up with File Not Found each time. Is there a way of modifying 64 programs to run on the Plus/4, or to perform a program merge?

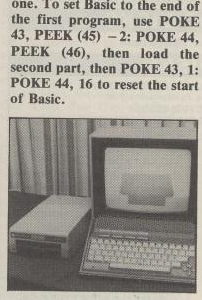
G R Skett
Haverfordwest
Dyfed

BECAUSE, as you say, the File Manager program is built into a ROM, it cannot be found by a program intended to look at disks. It's not possible to modify the File Manager program except by copying it into RAM and making the modifications there, but of course you would have to do this every time you wanted to use the program.

As for converting 64 programs to run on the Plus/4, it would be very difficult for a number of reasons. Firstly, the entire memory map is different, so every POKE would have to be altered; secondly, the Plus/4 has no hardware sprites, although these can be simulated by hi-res graphics; and the Plus/4 has a totally different sound chip to that of the 64. They are in effect two entirely different machines, and hoping to run 64 programs on the Plus/4 is almost as hopeless as hoping to run Amstrad programs!

However, program merging is fairly straightforward on the Plus/4. The two programs to be joined should not have conflicting line numbers. The end of a Basic program, seen from the machine code monitor, is marked by three zero bytes. Load the first program, then alter the start of Basic to the last two of these zero bytes, then load the second program, which will chain these links correctly. Then change the start of Basic back to normal.

You can now list, save and then run the whole program as one. To set Basic to the end of the first program, use POKE 43, PEEK (45) – 2: POKE 44, PEEK (46), then load the second part, then POKE 43, 1: POKE 44, 16 to reset the start of Basic.



64 disk systems

I HAVE recently acquired a second 1541 disk drive and wish to know what I have to do to integrate it with my 64 system as part of a dual-drive unit. It is, of course, a unit 0 with address 8.

A Shadrack
Narmanton
W Yorks

AS YOU intend a permanent dual drive setuup, the best option is a hardware change of the device number to 9. Your dealer should be able to perform this modification if the unit is still under warranty.

Otherwise, it can be done by cutting the jumper 1, which is the jumper nearest the front inside the case. On newer 1541's the jumpers are in the centre of the board and have brown covers.

The other option is to change the device number in software only:

OPEN 15,8,15: PRINT #15, "M-W"CHR$ (119) CHR$ (0) CHR$ (2) CHR$ (32+9) CHR$ (64+9): CLOSE 15

will turn the device number from 8 to 9 until the device is reset. The procedure you should use is to turn on the first drive, then the 64, then to run the above program, and finally turn on the second drive.

Speak your mind

I HAVE recently purchased a Speech 64, which works fine with the C128 in 64 mode. But is there any way I could use it in 128 mode?

A M Edwards
Uplands
Swansea

GENERALLY speaking no 64 program or add-on will work in 128 mode unless it is designed specifically with both systems in mind. The start points of the program routines will look at different memory locations, identify the machine and switch to the appropriate code.

DK'Tronics, the last company to distribute the MicroSpeech, no longer deal in any Currah products and cannot give any technical advice; so unless you know enough machine code to copy the Speech 64's code into ROM, alter its addresses to work with the 128, blow it onto an EPROM and mount it in the Speech 64 case, you're out of luck!

SPRDEF solution

SINCE I do not have a disk drive, I cannot save sprites after using SPRDEF on my 128. I have to go into the monitor, save the appropriate chunk, and to reload go into the monitor again, type L, exit again since this gives a load error in Basic, or corrupts the Basic program in memory. Can you tell me how to load the sprites from Basic without having to go through the monitor?

K Metreweb
London

TO LOAD machine code from Basic, you should use LOAD "PROGNAME", 1,1. The second 1 tells the machine to load the program into the correct memory area. If you omit it, you will load it into the Basic area, with the result that you will disrupt your program in the way you mentioned.

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WANTED to swap: Someone with tape software for the 1520 printer plotter. Word processors and hires programmes very much needed! Also I can put speech into your basic programmes in any language!! For more info Tel. (Barry) 738280 ask for Matthew.

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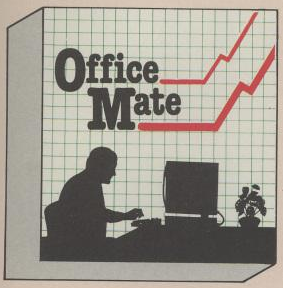

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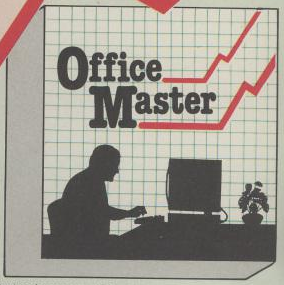

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1. Double entry routines for transactions through the cash/bank accounts and sales/purchase ledger control accounts.
2. Journal facility for the initial set up of accounts, or for adjustments to any of the accounts.
3. The facility to produce the following screened or printed reports:
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   (b) Monthly transaction summaries.
   (c) A trial balance whenever required.
   (d) Screen VAT memo account balances (sales/net purchases, and VAT accounts).
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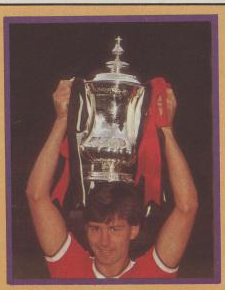

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